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I.—ON PROPOSITIONS: WHAT THEY ARE AND HOW THEY MEAN.*

By BERTRAND RUSSELL.

A PROPOSITION may be defined as: *What we believe when we believe truly or falsely.* This definition is so framed as to avoid the assumption that, whenever we believe, our belief is true or false. In order to arrive, from the definition, at an account of what a proposition is, we must decide what belief is, what is the sort of thing that can be believed, and what constitutes truth or falsehood in a belief. I take it as evident that the truth or falsehood of a belief depends upon a *fact* to which the belief "refers." Therefore it is well to begin our inquiry by examining the nature of facts.

I. *Structure of Facts.*

I mean by a "fact" anything complex. If the world contains no simples, then whatever it contains is a fact; if it contains any simples, then facts are whatever it contains except simples. When it is raining, that is a fact; when the sun is shining, that is a fact. The distance from London to Edinburgh is a fact. That all men die is probably a fact. That the planets move round the sun approximately in ellipses is a fact. In speaking of these as facts, I am not alluding to the phrases in which we assert them, or to our

* In what follows, the first section, on the structure of facts, contains nothing essentially novel, and is only included for the convenience of the reader. I have defended its doctrines elsewhere, and have therefore here set them down dogmatically. On the other hand, later sections contain views which I have not hitherto advocated, resulting chiefly from an attempt to define what constitutes "meaning" and to dispense with the "subject" except as a logical construction.

frame of mind while we make the assertions, but to those features in the constitution of the world which make our assertions true (if they are true) or false (if they are false).

To say that facts are complex is the same thing as to say that they have *constituents*. That Socrates was Greek, that he married Xantippe, that he died of drinking the hemlock, are facts that all have something in common, namely, that they are "about" Socrates, who is accordingly said to be a constituent of each of them.

Every constituent of a fact has a *position* (or several positions) in the fact. For example, "Socrates loves Plato" and "Plato loves Socrates" have the same constituents, but are different facts, because the constituents do not have the same positions in the two facts. "Socrates loves Socrates" (if it is a fact) contains Socrates in two positions. "Two and two are four" contains *two* in two positions. " $2+2=2^2$ " contains 2 in four positions.

Two facts are said to have the same "form" when they differ only as regards their constituents. In this case, we may suppose the one to result from the other by *substitution* of different constituents. For example, "Napoleon hates Wellington" results from "Socrates loves Plato" by substituting Napoleon for Socrates, Wellington for Plato, and *hates* for *loves*. It is obvious that some, but not all, facts can be thus derived from "Socrates loves Plato." Thus some facts have the same form as this, and some have not. We can represent the form of a fact by the use of variables: thus " xRy " may be used to represent the form of the fact that Socrates loves Plato. But the use of such expressions, as well as of ordinary language, is liable to lead to mistakes unless care is taken to avoid them.

There are an infinite number of forms of facts. It will conduce to simplicity to confine ourselves, for the moment, to facts having only three constituents, namely, two terms and a dual (or dyadic) relation. In a fact which has three con-

stituents, two can be distinguished from the third by the circumstance that, if these two are interchanged, we still have a fact, or, at worst, we obtain a fact by taking the contradictory of what results from the interchange, whereas the third constituent (the relation) cannot ever be interchanged with either of the others. Thus if there is such a fact as "Socrates loves Plato," there is either "Plato loves Socrates" or "Plato does not love Socrates," but neither Socrates nor Plato can replace *loves*. (For purposes of illustration, I am for the moment neglecting the fact that Socrates and Plato are themselves complex.) The essentially non-interchangeable constituent of a fact containing three constituents is called a *dual* (or *dyadic*) *relation*; the other two constituents are called the *terms* of that relation in that fact. The terms of dual relations are called *particulars*.*

Facts containing three constituents are not all of the same form. There are two forms that they may have, which are each other's opposites. "Socrates loves Plato" and "Napoleon does not love Wellington" are facts which have opposite forms. We will call the form of "Socrates loves Plato" *positive*, and the form of "Napoleon does not love Wellington" *negative*. So long as we confine ourselves to atomic facts, *i.e.*, to such as contain only one verb and neither generality nor its denial, the distinction between positive and negative facts is easily made. In more complicated cases there are still two kinds of facts, though it is less clear which is positive and which negative.

Thus the forms of facts divide into pairs, such that, given appropriate constituents, there is always a fact of one of the two correlated forms but not of the other. Given any two

* The above discussion might be replaced by that of subject-predicate facts or of facts containing triadic, tetradic . . . relations. But it is possible to doubt whether there are subject-predicate facts, and the others are more complicated than those containing three constituents. Hence these are best for purposes of illustration.

particulars of a dual relation, say x and y and R , there will be either a fact " xRy ," or a fact " $\text{not } xRy$." Let us suppose, for the sake of illustration, that x has the relation R to y , and z does not have the relation S to w . Each of these facts contains only three constituents, a relation and two terms; but the two facts do not have the same form. In the one, R relates x and y ; in the other, S does not relate z and w . It must not be supposed that the negative fact contains a constituent corresponding to the word "not." It contains no more constituents than a positive fact of the correlative positive form. The difference between the two forms is ultimate and irreducible. We will call this characteristic of a form its *quality*. Thus facts, and forms of facts, have two opposite qualities, positive and negative.

There is implanted in the human breast an almost unquenchable desire to find some way of avoiding the admission that negative facts are as ultimate as those that are positive. The "infinite negative" has been endlessly abused and interpreted. Usually it is said that, when we deny something, we are really asserting something else which is incompatible with what we deny. If we say "roses are not blue," we mean "roses are white or red or yellow." But such a view will not bear a moment's scrutiny. It is only plausible when the positive quality by which our denial is supposed to be replaced is incapable of existing together with the quality denied. "The table is square" may be denied by "the table is round," but not by "the table is wooden." The only reason we can deny "the table is square" by "the table is round" is that what is round is *not* square. And this has to be a *fact*, though just as negative as the fact that this table is not square. Thus it is plain that incompatibility cannot exist without negative facts.

There might be an attempt to substitute for a negative fact the mere absence of a fact. If A loves B , it may be said, that is a good substantial fact; while if A does not love B , that merely expresses the absence of a fact composed of A and

loving and B, and by no means involves the actual existence of a negative fact. But the absence of a fact is itself a negative fact; it is the fact that there is *not* such a fact as A loving B. Thus, we cannot escape from negative facts in this way.

Of the many attempts that have been made to dispense with negative facts, the best known to me is that of Mr. Demos.* His view is as follows: There is among propositions an ultimate relation of *opposition*; this relation is indefinable, but has the characteristic that when two propositions are opposites they cannot both be true, though they may both be false. Thus "John is in" and "John is gone to Semipalatinsk" are opposites. When we deny a proposition, what we are really doing is to assert: "Some opposite of this proposition is true." The difficulty of this theory is to state the very important fact that two opposites cannot both be true. "The relation of opposition," says Mr. Demos, "is such that, if p opposes q , p and q are not both true (at least one of them is false). This must not be taken as a definition, for it makes use of the notion 'not' which, I said, is equivalent to the notion 'opposite.' In fact, opposition seems epistemologically to be a primitive notion" (p. 191). Now if we take Mr. Demos's statement that " p and q are not both true" and apply his definition to it, it becomes "an opposite of ' p and q are both true' is true." But this does not yield what we want. Suppose some obstinate person were to say: "I believe p , and I believe q , and I also believe that an opposite of ' p and q are both true' is true." What could Mr. Demos reply to such a person? He would presumably reply; "Don't you see that that is impossible? It cannot be the case that p and q are both true, and also that an opposite of ' p and q are both true' is true." But an opponent would retort by asking him to state his negation in his own language, in which case all that Mr. Demos could say would be: "Let us

* "A Discussion of a Certain Type of Negative Proposition," *Mind*, N.S., No. 102, pp. 188-196 (April, 1917).

give the name P to the proposition ' p and q are both true.' Then the proposition that you assert and that I deny is ' P is true, and also some opposite of P is true.' Calling this proposition Q , and applying my definition of negation, what I am asserting is that some opposite of Q is true." This also the obstinate person would admit. He would go on for ever admitting opposites, but refusing to make any denials. To such an attitude, so far as I can see, there would be no reply except to change the subject. It is, in fact, necessary to admit that two opposites cannot both be true, and not to regard this as a statement to which the suggested definition of negation is to be applied. And the reason is that we must be able to say that a proposition is not true without having to refer to any other proposition.

The above discussion has prematurely introduced propositions, in order to follow Mr. Demos's argument. We shall see later, when we have defined propositions, that all propositions *are* positive facts, even when they assert negative facts. This is, I believe, the source of our unwillingness to admit negative facts as ultimate. The subject of negative facts might be argued at great length, but as I wish to reach the proper topic of my paper, I will say no more about it, and will merely observe that a not dissimilar set of considerations shows the necessity of admitting *general* facts, *i.e.*, facts about all or some of a collection.

II. *Meaning of Images and Words.*

The questions which arise concerning propositions are so many and various that it is not easy to know where to begin. One very important question is as to whether propositions are what I call "incomplete symbols" or not. Another question is as to whether the word "proposition" can stand for anything except a form of words. A third question is as to the manner in which a proposition refers to the fact that makes it true or false. I am not suggesting that these are the only important

questions, but they are, at any rate, questions which any theory of propositions should be able to answer.

Let us begin with the most tangible thing: the proposition as a form of words. Take again "Socrates loves Plato." This is a complex symbol, composed of three symbols, namely "Socrates" and "loves" and "Plato." Whatever may be the meaning of the complex symbol, it is clear that it depends upon the meanings of the separate words. Thus before we can hope to understand the meaning of a proposition as a form of words, we must understand what constitutes the meaning of single words.

Logicians, so far as I know, have done very little towards explaining the nature of the relation called "meaning," nor are they to blame in this, since the problem is essentially one for psychology. But before we tackle the question of the meaning of a word, there is one important observation to be made as to what a word *is*.

If we confine ourselves to spoken words in one language, a word is a class of closely similar noises produced by breath combined with movements of the throat and tongue and lips. This is not a *definition* of "words," since some noises are meaningless, and meaning is part of the definition of "words." It is important, however, to realize at the outset that what we call one word is not a single entity, but a class of entities: there are instances of the word "dog" just as there are instances of dogs. And when we hear a noise, we may be doubtful whether it is the word "dog" badly pronounced or not: the noises that are instances of a word shade off into other noises by continuous gradations, just as dogs themselves may shade off into wolves according to the evolutionary hypothesis. And, of course, exactly the same remarks apply to written words.

It is obvious to begin with that, if we take some such word as "Socrates" or "dog," the meaning of the word consists in some relation to an object or set of objects. The first question to be asked is: Can the relation called "meaning" be a direct

relation between the word as a physical occurrence and the object itself, or must the relation pass through a "mental" intermediary, which could be called the "idea" of the object?

If we take the view that no "mental" intermediary is required, we shall have to regard the "meaning" of a word as consisting in what James would call "processes of leading." That is to say, the causes and effects of the occurrence of a word will be connected, in some way to be further defined, with the object which is its meaning. To take an unusually crude instance: You see John, and you say, "Hullo, John"—this gives the *cause* of the word; you call "John," and John appears at the door—this gives the *effect* of the word. Thus, in this case, John is both cause and effect of the word "John." When we say of a dog that he "knows" his name, it is only such causal correlations that are indubitable: we cannot be sure that there is any "mental" occurrence in the dog when we call him and he comes. Is it possible that all use and understanding of language consists merely in the fact that certain events cause it, and it, in turn, causes certain events?

This view of language has been advocated, more or less tentatively, by Professor Watson in his book on *Behaviour*.* The behaviourist view, as I understand it, maintains that "mental" phenomena, though they may exist, are not amenable to scientific treatment, because each of them can only be observed by one observer—in fact, it is highly doubtful whether even one observer can be aware of anything not reducible to some bodily occurrence. Behaviourism is not a metaphysic, but a principle of method. Since language is an observable phenomenon, and since language has a property which we call "meaning," it is essential to behaviourism to give an account of "meaning" which introduces nothing known only through introspection. Professor Watson recognizes this obligation

* *Behavior: An Introduction to Comparative Psychology*, by John B. Watson, Professor of Psychology in the Johns Hopkins University, New York, 1914. See especially pp. 321-334.

and sets to work to fulfil it. Nor is it to be lightly *assumed* that he cannot do so, though I incline to the belief that a theory of language which takes no account of images is incomplete in a vital point. But let us first see what is to be said in favour of the behaviourist theory of language.

Professor Watson denies altogether the occurrence of images, which he replaces by faint kinæsthetic sensations, especially those belonging to the pronunciation of words *sotto voce*. He defines "implicit behaviour" as "involving only the speech mechanisms (or the larger musculature in a minimal way; *e.g.*, bodily attitudes or sets)" (p. 19). He adds: "It is implied in these words that there exists, or ought to exist, a method of observing implicit behaviour. There is none at present. The larynx and tongue, we believe, are the loci of most of the phenomena" (p. 20). He repeats these views in greater detail in a later chapter. The way in which the intelligent use of words is learnt is thus set forth:

"The stimulus (object) to which the child often responds, a box, *e.g.*, by movements such as opening and closing and putting objects into it, may serve to illustrate our argument. The nurse, observing that the child reacts with his hands, feet, etc., to the box, begins to say 'box' when the child is handed the box, 'open box' when the child opens it, 'close box' when he closes it, and 'put doll in box' when that act is executed. This is repeated over and over again. In the process of time it comes about that without any other stimulus than that of the box which originally called out only the bodily habits, he begins to say 'box' when he sees it, 'open box' when he opens it, etc. The visible box now becomes a stimulus capable of releasing either the bodily habits or the word-habit, *i.e.*, development has brought about two things: (1) a series of functional connexions among arcs which run from visual receptor to muscles of throat, and (2) a series of already earlier connected arcs which run from the same receptor to the bodily muscles. . . . The object meets the child's vision. He runs to it

and tries to reach it and says 'box'. . . . Finally the word is uttered without the movement of going towards the box being executed. . . . Habits are formed of going to the box when the arms are full of toys. The child has been taught to deposit them there. When his arms are laden with toys and no box is there, the word-habit arises and he calls 'box'; it is handed to him and he opens it and deposits the toys therein. This roughly marks what we would call the genesis of a true language habit" (pp. 329-330).

A few pages earlier, he says: "We say nothing of reasoning since we do not admit this as a genuine type of human behavior except as a special form of language habit" (p. 319).

The questions raised by the above theory of language are of great importance, since the possibility of what may be called a materialistic psychology turns on them. If a person talks and writes intelligently, he gives us as much evidence as we can ever hope to have of his possessing a mind. If his intelligent speech and writing can be explained on Professor Watson's lines, there seems to remain nothing he can do to persuade us that he is not merely physical.

There is, I think, a valid objection to the behaviouristic view of language on the basis of fact and an invalid one of theory. The objection of fact is that the denial of images appears empirically indefensible. The objection of theory (which, in spite of its apparent force, I do not believe to be unanswerable) is that it is difficult, on the basis of the above quotations, to account for the occurrence of the word when the object is merely desired, not actually present. Let us take these in succession.

(1) *Existence of Images*.—Professor Watson, one must conclude, does not possess the faculty of visualising, and is unwilling to believe that others do. Kinæsthetic images can be explained away, as being really small sensations of the same kind as those that would belong to actual movements. Inner speech, in particular, in so far as it is not accompanied

by auditory images, may, I think, really consist of such small sensations, and be accompanied by small movements of the tongue or throat such as behaviourism requires. Tactile images might possibly be similarly explained. But visual and auditory images cannot be so explained, because, if taken as sensations, they actually contradict the laws of physics. The chair opposite to you is empty; you shut your eyes and visualise your friend as sitting in it. This is an event in you, not in the outer world. It *may* be a *physiological* event, but even so it must be radically distinguished from a visual sensation, since it affords no part of the data upon which our knowledge of the physical world outside our own body is built. If you try to persuade an ordinary uneducated person that she cannot call up a visual picture of a friend sitting in a chair, but can only use words describing what such an occurrence would be like, she will conclude that you are mad. (This statement is based upon experiment.) I see no reason whatever to reject the conclusion originally suggested by Galton's investigations, namely, that the habit of abstract pursuits makes learned men much inferior to the average in the power of visualising, and much more exclusively occupied with words in their "thinking." When Professor Watson says: "I should throw out imagery altogether and attempt to show that practically all natural thought goes on in terms of sensori-motor processes in the larynx (but not in terms of imageless thought)" (*Psychological Review*, 1913, p. 174*n*), he is, it seems to me, mistaking a personal peculiarity for a universal human characteristic.

The rejection of images by behaviourists is, of course, part of their rejection of introspection as a source of knowledge. It will be well, therefore, to consider for a moment the grounds in favour of this rejection.

The arguments of those who oppose introspection as a scientific method seem to me to rest upon two quite distinct grounds, of which one is much more explicit in their writings than the other. The ground which is the more explicit is that

data obtained by introspection are private and only verifiable by one observer, and cannot therefore have that degree of public certainty which science demands. The other, less explicit, ground is that physical science has constructed a spatio-temporal cosmos obeying certain laws, and it is irritating to have to admit that there are things in the world which do not obey these laws. It is worth while to observe that the definition of introspection is different according as we take the one or the other of these grounds of objection.

If privacy is the main objection to introspective data, we shall have to include among such data all bodily sensations. A tooth-ache, for example, is essentially private. The dentist may see that your tooth is in a condition in which it is likely to ache, but he does not feel your ache, and only knows what you mean by an ache through his own experience of similar occurrences. The correlation of cavities with toothaches has been established by a number of observations, each of which was private, in exactly the sense which is considered objectionable. And yet one would not call a person introspective because he was conscious of tooth-ache, and it is not very difficult to find a place for tooth-ache in the physical world. I shall not insist upon the fact that, in the last analysis, all our sensations are private, and the public world of physics is built on similarities, not on identities. But it is worth while to insist upon the privacy of the sensations which gives us knowledge of our own body over and above the knowledge we have of other bodies. This is important, because no one regards as scientifically negligible the knowledge of our own body which is obtained through these private data.

This brings us to the second ground of objection to introspection, namely, that its data do not obey the laws of physics. This, though less emphasised, is, I think, the objection which is really felt the more strongly of the two. And this objection leads to a definition of introspection which is much more in harmony with usage than that which results from making

privacy the essential characteristic of its data. For example, Knight Dunlap, a vigorous opponent of introspection, contends that images are really muscular contractions,* and evidently regards our awareness of muscular contractions as not coming under the head of introspection. I think it will be found that the essential characteristic of introspective data is concerned with *localization*: either they are not localized at all, or they are localized in a place already physically occupied by something which would be inconsistent with them if they were regarded as part of the physical world. In either case, introspective data have to be regarded as not obeying the laws of physics, and this is, I think, the fundamental reason why an attempt is made to reject them.

The question of the publicity of data and the question of their physical status are not wholly unconnected. We may distinguish a gradually diminishing degree of publicity in various data. Those of sight and hearing are the most public; smell somewhat less so; touch still less; visceral sensations hardly at all. The question turns on the degree and frequency of similarity of sensations in neighbours at the same time. If we hear a clap of thunder when no one else does, we think we are mad; if we feel a stomach-ache when no one else does, we are in no way surprised. We say, therefore, that the stomach-ache is *mine*, while the thunder is not. But what is mine includes what belongs to the body, and it is here that the stomach-ache belongs. The stomach-ache is *localized*: it has a position near the surface of the stomach, which is visible and palpable. (How the localization is effected need not concern us in this connexion.) Now, when we consider the localization of

* *Psychological Review*, 1916, "Thought-Content and Feeling," p. 59. See also his articles in an earlier volume of the same review, "The Case against Introspection," 1912, pp. 404-413, and "The Nature of Perceived Relations," *ibid.*, pp. 415-446. In this last article he states "that 'introspection,' divested of its mythological suggestion of the observing of consciousness, is really the observation of bodily sensations (sensibles) and feelings (feelables)" (p. 427*n*).

images, we find a difference according to the nature of the images. Images of private sensations can be localized where the private sensations would be, without causing any gross or obvious violation of physical laws. Images of words in the mouth can be located in the mouth. For this reason, there is no *primâ facie* objection to regarding them, as Watson does, as small sensations: this view may or may not be true, but it is not capable of being rejected without more ado. In regard to all private sensations, the distinction between image and sensation is not sharp and definite. But visual and auditory images are in quite a different position, since the physical event to which they would point if they were sensations is not taking place.

Thus the crucial phenomena as regards introspection are images of public sensations, *i.e.*, especially visual and auditory images. On grounds of observation, in spite of Watson, it seems impossible to deny that such images occur. But they are not public, and, if taken as sensations, contradict the laws of physics. Reverting to the case of visualizing a friend in a chair which, in fact, is empty, you cannot locate the image in the body because it is visual, nor (as a physical phenomenon) in the chair, because the chair, as a physical object, is empty. Thus it seems that the physical world does not include all that we are aware of, and that introspection must be admitted as a source of knowledge distinct from sensation.

I do not, of course, mean to suggest that visual and auditory images are our only non-physical data. I have taken them as affording the strongest case for the argument; but when they are admitted, there is no longer any reason to reject other images.

Our criticism of fact, as against Watson, has led us to the conclusion that it is impossible to escape the admission of images as something radically distinct from sensations, particularly as being not amenable to the laws of physics. It remains to consider a possible criticism of theory, namely, that

it is difficult, on his view, to account for the occurrence of a word when an absent object is desired. I do not think this criticism valid, but I think the considerations which it suggests are important.

(2) *Words in the Absence of their Objects.*—In the account given by Watson of the child learning to use the word “box,” attention is almost wholly concentrated on the way the word comes to occur in the presence of the box. There is only a brief reference to the use of the word when the object is absent but desired: “Habits are formed of going to the box when the arms are full of toys. The child has been taught to deposit them there. When his arms are laden with toys and no box is there, the word-habit arises and he calls ‘box.’” The difficulty—I think not insuperable—which arises in regard to this account is that there seems no adequate stimulus for the word-habit in the circumstances supposed. We are assuming that the habit has been formed of saying “box” when the box is present; but how can such a habit lead to the use of the same word when the box is absent? The believer in images will say that, in the absence of the box, an image of it will occur in the child, and this image will have the same associations as the box has, including the association with the word “box.” In this way the use of the word is accounted for; but in Watson’s account it remains mysterious. Let us see what this objection amounts to.

The phenomenon called “thinking,” however it may be analysed, has certain characteristics which cannot be denied. One of the most obvious of these is that it enables us to act with reference to absent objects, and not only with reference to those that are sensibly present. The tendency of the behaviourist school is to subordinate cognition to action, and so regard action as physically explicable. Now I do not wish to deny that much action, perhaps most, is physically explicable, but nevertheless it seems impossible to account for *all* action without taking account of “ideas,” *i.e.*, images of absent objects.

If this view is rejected, it will be necessary to explain away all desire. Desire is not dealt with by Watson:* it and kindred words are absent from the index to his book. In the absence of such a phenomenon as desire, it is difficult to see what is happening when the child with his arms full of toys says "box." One would naturally say that an image of the box occurs, combined with the feeling we call "desire," and that the image is associated with the word just as the object would be, because the image resembles the object. But Watson requires that the arms full of toys should cause the word "box" without any intermediary. And it is not at first sight obvious how this is to be brought about.

To this objection there seem two possible replies: one, that the occurrence of the image on the usual theory is just as mysterious as the occurrence of the word on Watson's theory; the other, that the passage from full arms to the word "box" is a telescoped process, derived from the habit of the transition from full arms to the box and thence to the word "box." The objection to the second of these replies seems to be that the transition to the word "box" in the absence of the box *feels* quite unlike the transition to the word through the actual box: in the latter there is satisfaction, in the former dissatisfaction. Telescoped processes give similar feelings to complete processes; in so far as they differ, they give more satisfaction as involving less effort. The word "box" is not the terminus of the child's efforts, but a stage towards their success. It seems difficult, therefore, to assimilate the occurrence of a word in desire to a telescoped process. The retort to the first reply, namely, that the occurrence of the image is as mysterious as the occurrence of the word, is that, if images are admitted, we can admit psychological causal laws which are different from those of the physical world, whereas on Watson's view we shall

* The only discussion of desire by Watson, as far as I know, is in connexion with psycho-analysis in his article, "The Psychology of Wish Fulfilment," *Scientific Monthly*, November, 1916.

have to admit physiological laws which are different from those of physics. In the physical world, if A often causes B, and B often causes C, it does not happen that, in those cases where A fails to cause B, it nevertheless causes C by a telescoped process. I go often to a certain restaurant (A), eat there (B), and find my hunger satisfied (C). But, however, often this has happened, if, on a certain occasion, the restaurant is closed, so that B fails, I cannot arrive at C. If I could, economy in war-time would be easier than it is. Now, the process Watson assumes is strictly analogous to this. In his theory we have a frequent transition from arms-full (A) to the box (B) and thence to the word "box" (C). Then one day the transition from A to B fails, but nevertheless the transition from A to C takes place. This demands other causal laws than those of physics—at least *prima facie*. If images are admitted, it is easy to see that the laws of their occurrence and effects are different from those of physics, and therefore the above difficulty does not exist in regard to them; but if they are denied, a difference of causal laws is required within the realm of matter.

This argument, however, is by no means conclusive. The behaviour of living matter is obviously in some respects different from that of dead matter, but this does not prove that the difference is ultimate. Gases and solids behave differently, yet both obey ultimate physical laws. The chief peculiarities in the behaviour of animals are those due to habit and association, all of which, I believe, may be summarised in the one law: "When A and B have often existed in close temporal contiguity, either tends to cause the other." This law will only apply to occurrences within the body of a single animal. But I think it suffices to account for telescoped processes, and for the use of words in the absence of their objects. Thus in Watson's instance, the child has frequently experienced the sequence: arms-full, box, the word "box." Thus arms-full and the word "box" have frequently existed in

close temporal contiguity, and hence arms-full can come to cause the word "box." They cannot cause the box itself, because this is governed by physical laws independent of the child's body; but they can cause the word. (The above law, however, may be explained on orthodox physical lines by the properties of nervous tissue, and does not demand a *fundamental* distinction between physiology and physics.) If, therefore, images were not empirically undeniable, I should not consider them theoretically necessary in order to account for the occurrence of words in the absence of their objects.

William James, in his *Essays in Radical Empiricism*, developed the view that the mental and the physical are not distinguished by the stuff of which they are made, but only by their causal laws. This view is very attractive, and I have made great endeavours to believe it. I think James is right in making the distinction between the causal laws the essential thing. There do seem to be psychological and physical causal laws which are distinct from each other.* We may define psychology as the study of the one sort of laws, and physics as the study of the other. But when we come to consider the stuff of the two sciences, it would seem that there are some particulars which obey only physical laws (namely, unperceived material things), some which obey only psychological laws (namely, images, at least), and some which obey both (namely, sensations). Thus sensations will be both physical and mental, while images will be purely mental. The use of words actually pronounced or written is part of the physical world, but in so far as words obtain their meaning through images, it is impossible to deal adequately with words without introducing psychology and taking account of data obtained by introspection. If this conclusion is valid, the behaviourist theory

* I do not pretend to know whether the distinction is ultimate and irreducible. I say only that it is to be accepted practically in the present condition of science.

of language is inadequate, in spite of the fact that it suggests much that is true and important.

I shall henceforth assume the existence of images, and shall proceed, on this assumption, to define the "meaning" of words and images.

In considering the meaning of either a word or an image, we have to distinguish—

- (1) The causes of the word or image,
- (2) Its effects,
- (3) What is the relation that constitutes meaning.

It is fairly clear that "meaning" is a relation involving causal laws, but it involves also something else which is less easy to define.

The meaning of words differs, as a rule, from that of images by depending upon association, not upon similarity.

To "think" of the meaning of a word is to call up images of what it means. Normally, grown-up people speaking their own language use words without thinking of their meaning. A person "understands" a word when (*a*) suitable circumstances make him use it, (*b*) the hearing of it causes suitable behaviour in him. We may call these two active and passive understanding respectively. Dogs often have passive understanding of some words, but not active understanding.

It is not necessary to "understanding" a word that a person should "know what it means," in the sense of being able to say "this word means so-and-so." A word has a meaning, more or less vague; but the meaning is only to be discovered by observing its use: the use comes first, and the meaning is distilled out of it. The relation of a word to its meaning is, in fact, of the nature of a causal law, and there is no more reason why a person using a word correctly should be conscious of its meaning than there is for a planet which is moving correctly to be conscious of Kepler's laws.

To illustrate what is meant by "understanding" words and

sentences, let us suppose that you are walking in London with an absent-minded friend. You say "look out, there's a motor coming." He will glance round and jump aside without the need of any "mental" intermediary. There need be no "ideas," but only a stiffening of the muscles, followed quickly by action. He "understands" the words, because he does the right thing. Such "understanding" may be regarded as belonging to the nerves and brain, being habits which they have acquired while the language was being learnt. Thus understanding in this sense may be reduced to mere physiological causal laws.

If you say the same thing to a Frenchman with a slight knowledge of English, he will go through some inner speech which may be represented by "Que dit-il? Ah oui, une automobile." After this, the rest follows as with the Englishman. Watson would contend that the inner speech must be actually incipiently pronounced; we should argue that it might be merely imagined. But this point need not detain us at present.

If you say the same thing to a child who does not yet know the word "motor," but does know the other words you are using, you produce a feeling of anxiety and doubt: you will have to point and say "there, that's a motor." After that, the child will roughly understand the word "motor," though he may include trains and steam-rollers. If this is the first time the child has heard the word "motor," he may, for a long time, continue to recall this scene when he hears the word.

So far we have found four ways of understanding words:—

(1) On suitable occasions you use the word properly.

(2) When you hear it, you act appropriately.

(3) You associate the word with another word (say in a different language) which has the appropriate effect on behaviour.

(4) When the word is being first learnt, you associate it

with an object, which is what it "means"; thus the word acquires some of the same causal efficacy as the object. The word "motor!" can make you leap aside, just as the motor can, but it cannot break your bones.

So far, everything can be accounted for by behaviour. But so far we have only considered what may be called the "demonstrative" use of language to point out a feature in the present environment, we have not considered what we may call its "narrative" use, of which we may take as an instance the telling of some remembered event.

Let us take again the case of the child hearing the word "motor" for the first time. On some later occasion, we will suppose, the child remembers the incident and relates it to someone else. In this case, both the active and passive understanding of words is different from what it is when words are used demonstratively. The child is not seeing a motor, but only remembering one; the hearer does not look round in expectation of seeing a motor coming, but "understands" that a motor came at some earlier time. The whole of this occurrence is much more difficult to account for on behaviourist lines—indeed, it does not call for any particular behaviour. It is clear that, in so far as the child is genuinely remembering, he has a picture of the past occurrence, and his words are chosen so as to describe the picture; and in so far as the hearer is genuinely apprehending what is said, the hearer is acquiring a picture more or less like that of the child. It is true that this process may be telescoped through the operation of the word-habit. The child may not genuinely remember the incident, but only have the habit of the appropriate words, as in the case of a poem which we know by heart though we cannot remember learning it. And the hearer also may only pay attention to the words, and not call up any corresponding picture. But it is nevertheless the possibility of a memory-image in the child and an imagination-image in the hearer that makes the essence of the "meaning" of the words. In so far

as this is absent, the words are mere counters, capable of meaning, but not at the moment possessing it. We may say that, while words used demonstratively describe and are intended to cause sensations, the same words used in narrative describe and are intended to cause images.

We have thus two other ways in which words can mean (perhaps not fundamentally distinct), namely, the way of memory and the way of imagination. That is to say:—

(5) Words may be used to describe or recall a memory-image: to describe it when it already exists, or to recall it where the words exist as a habit and are known to be descriptive of some past experience.

(6) Words may be used to describe or create an imagination-image: to describe it, for example, in the case of a poet or novelist, or to create it in the ordinary case of giving information—though in the latter case, it is intended that the imagination-image, when created, shall be accompanied by belief that something of the sort has occurred.

These two ways of using words may be spoken of together as the use of words in “thinking.” This way of using words, since it depends upon images, cannot be fully dealt with on behaviourist lines. And this is really the most essential function of words: that, primarily, through their connexion with images, they bring us into touch with what is remote in time or space. When they operate without the medium of images, this seems to be a telescoped process. Thus the problem of the meaning of words is reduced to the problem of the meaning of images.

The “meaning” of images is the simplest kind of meaning, because images resemble what they mean, whereas words, as a rule, do not. Images are said to be “copies” of sensations. It is true that this assumption is liable to sceptical criticism, but I shall assume it to be true. It appears to common-sense to be verified by such experiences as, *e.g.*, recalling a familiar room, and then going into the room and finding it as it was remem-

bered. If our memory was wrong, we must suppose that the room and our image of it have undergone similar changes, which does not seem a plausible hypothesis. Thus for practical purposes we are justified in assuming that, in this case, our image resembled what the room was when we previously saw it. We may then say that our image "means" the room.

The question what a given image "means" is partly within the control of our will. The image of a printed word may mean, not the word, but what the word means. The image of a triangle may mean one particular triangle, or triangles in general. In thinking of dogs in general, we may use a vague image of a dog, which means the species, not any individual. Similarly in recalling a friend's face we usually do not recall any one special occasion when we have seen it, but a compromise image of many occasions.

While some images mean particulars and others mean universals (in early stages of thought meaning is too vague to be either definitely particular or definitely universal), all images *are* particulars, but what they mean depends upon the nature of their causal efficacy. An image means a universal if its effects depend only upon its prototype being an instance of that universal. Thus, if I call up an image of a dog with a view to a general statement about dogs, I only *use* those characteristics of my image which it shares with all images of dogs. We can, to some extent, use or ignore the particular features of an image as we choose. In using *words*, we always ignore all that is peculiar to the instance of the word, except in elocution and caligraphy. Two instances of the word "dog" are more alike than two dogs; this is one reason why words help in dealing with universals.

If we accept Hume's principle that simple ideas are derived from impressions, we shall hold that at any rate the simple sensible qualities that enter into an image are "copies" of sensible qualities that have been given in sensation. Complex images are often, but not always, copies of complex sensations;

their constituents, if Hume is right, are always copies of something given in sensation. That of which an image is a copy is called its "prototype"; and this, or its parts, by Hume's principle, is always an indispensable part of the cause either of the image, or of its constituents (in the case of a complex imagination image).

The effects of an image tend to resemble those of its prototype, or to produce desire or aversion for it. This is one link between an image and its meaning. The thought of a drink has effects on a thirsty man which are similar to those of a sight of the foaming glass. This similarity belongs also to words, primarily, no doubt, through their power of calling up images, but afterwards directly.

The way in which an image resembles its prototype is peculiar. Images as a class have (with rare exceptions) characteristic differences from sensations as a class, but individual images, subject to these differences, resemble individual sensations. Images, however, are of various degrees of vagueness, and the vaguer they are the more different objects can be accepted as their prototypes. The nearest approach that I can make to a definition of the relation of image and prototype is this: If an object *O* is the prototype (or a prototype, in the case of vagueness) of an image, then, in the presence of *O*, we can recognise it as what we had an image "of." We may then say that *O* is the "meaning" (or a meaning, in the case of vagueness) of the image. But, as we saw, meaning is to some extent subject to the will: a "generic" image, for example, is simply one intended to be generic.

III. *Propositions and Belief.*

In regard to belief, there are three elements to be considered, namely: (1) the content which is believed, (2) the relation of the content to its "objective," *i.e.*, to the fact which makes it true or false, (3) the element which *is* belief, as opposed to consideration of the same content, or doubt con-

cerning it, or desire for it, etc. The second of these questions I propose to postpone until the next section; for the present, therefore, we are not concerned with the question what makes a belief true or false, though it is important to remember that the property of being true or false is what specially characterises beliefs. The other two questions we will consider in this section.

(1) *The Content of a Belief*.—The view to be taken on this question depends, to some extent, upon the view we take of “ideas” or “presentations.” We have here a great variety of theories urged by different authors. Many analytic psychologists—Meinong, for example—distinguish three elements in a presentation, namely, the act (or subject), the content, and the object. Realists such as Dr. Moore and myself have been in the habit of rejecting the content, while retaining the act and the object. American realists, on the other hand, have rejected both the act and the content, and have kept only the object; while idealists, in effect if not in words, have rejected the object and kept the content.

Is there any way of deciding amid this bewildering variety of hypotheses?

I have to confess that the theory which analyses a presentation into act and object no longer satisfies me. The act, or subject, is schematically convenient, but not empirically discoverable. It seems to serve the same sort of purpose as is served by points and instants, by numbers and particles and the rest of the apparatus of mathematics. All these things have to be *constructed*, not postulated: they are not of the stuff of the world, but assemblages which it is convenient to be able to designate as if they were single things. The same seems to be true of the subject, and I am at a loss to discover any actual phenomenon which could be called an “act” and could be regarded as a constituent of a presentation. The logical analogies which have led me to this conclusion have been reinforced by the arguments of James and the American

realists. It seems to me imperative, therefore, to construct a theory of presentation and belief which makes no use of the "subject," or of an "act" as a constituent of a presentation. Not that it is certain that there is no such thing as a "subject," any more than it is certain that there are no points and instants. Such things *may* exist, but we have no reason to suppose that they do, and therefore our theories ought to avoid assuming either that they exist or that they do not exist. The *practical* effect of this is the same as if we assumed that they did not exist, but the theoretical attitude is different.

The first effect of the rejection of the subject is to render necessary a less relational theory of mental occurrences. Brentano's view, for example, that mental phenomena are characterised by "objective reference," cannot be accepted in its obvious sense. A sensation in particular can no longer be regarded as a relation of a subject to a sense-datum; accordingly the distinction between sensation and sense-datum lapses, and it becomes impossible to regard a sensation as in any sense cognitive. *Per contra*, a sensation becomes equally part of the subject-matter of physics and of psychology: it is simultaneously part of the mind of the person who "has" the sensation, and part of the body which is "perceived" by means of the sensation.* This topic demands amplification, but not here, since it is not very relevant to our present theme.

Apart from sensations, "presentations" appear, as a matter of observation, to be composed of images. Images, in accordance with what has just been said, are not to be regarded as relational in their own nature; nevertheless, at least in the case of memory-images, they are felt to point beyond themselves to something which they "mean." We have already dealt with the meaning of images as far as was possible without introducing belief; but it is clear that, when we remember by

* Assuming the theory of bodies developed in my "Knowledge of the External World."

means of images, the images are accompanied by a belief, a belief which may be expressed (though with undue explicitness) by saying that they are felt to be copies of something that existed previously. And, without memory, images could hardly acquire meaning. Thus the analysis of belief is essential even to a full account of the meaning of words and images—for the meaning of words, we found, depends on that of images, which in turn depends on memory, which is itself a form of belief.

We have thus, so far, two sorts of mental “stuff,” namely, (*a*) sensations, which are also physical, and (*b*) images, which are purely mental. Sensations do not “mean,” but images often do, through the medium of belief.

The theory of belief which I formerly advocated, namely, that it consisted in a multiple relation of the subject to the objects constituting the “objective,” *i.e.*, the fact that makes the belief true or false, is rendered impossible by the rejection of the subject. The constituents of the belief cannot, when the subject is rejected, be the same as the constituents of its “objective.” This has both advantages and disadvantages. The disadvantages are those resulting from the gulf between the content and the objective, which seem to make it doubtful in what sense we can be said to “know” the objective.* The advantages are those derived from the rehabilitation of the content, making it possible to admit propositions as actual complex occurrences, and doing away with the difficulty of answering the question: what do we believe when we believe falsely? The theory I wish to advocate, however, is not to be recommended by these advantages, or rejected on account of these disadvantages: it is presented for acceptance on the ground that it accords with what can be empirically observed,

* An important part of “knowing” will consist in the fact that, by means of “ideas,” we are able to act in a way which is appropriate to an absent object, and are not dependent upon the stimulus of present sensation. I have not developed this order of ideas in the present paper, but I do not wish to minimise its importance.

and that it rejects everything mythological or merely schematic. Whether it is epistemologically convenient or inconvenient is a question which has no bearing upon its truth or falsehood, and which I do not propose to consider further.

Are sensations and images, suitably related, a sufficient stuff out of which to compose beliefs? I think they are. But this question has to be asked twice over, once as regards the content, *i.e.*, what is believed, and then again as regards the believing. For the present, we are concerned with the content.

That what is believed must always be the sort of thing which we express by a proposition, is a view which I am not concerned either to assert or to deny. It may be that a single simple image may be believed. For our purposes, however, the important beliefs, even if they be not the only ones, are those which, if rendered into explicit words, take the form of a proposition, *i.e.*, that A is B, or that x has the relation R to y , or that all men are mortal, or that something like *this* existed before, or any other such sentence. But the psychological classification of the contents of beliefs is very different from the logical classification, and at present it is psychological questions that concern us. Psychologically, some of the simplest beliefs that occur seem to be among memories and expectations. When you recall some recent event, you are believing something. When you go to a familiar place, you may be expecting to find things much as usual: you may have an image of your host saying how-do-you-do, and you may believe that this will happen. In such cases, the belief is probably not put into words, but if it were, it would take the form of a proposition.

For the present I shall define a "proposition" as *the content of a belief*, except when, if ever, the content is simple. But since we have not yet defined "belief," this definition cannot be regarded as yet as a very valuable one.

The content of a belief *may* consist only of words, but if it does, this is a telescoped process. The primary phe-

nomenon of belief consists of belief in images, of which, perhaps, memory is the most elementary example. But, it may be urged, a memory-belief does not consist *only* of the memory-image, together with bare believing: it is clear that the images may be the same for a memory and an expectation, which are nevertheless different beliefs. I incline to the view that the difference, in this case, is not in the content of what is believed, but in the believing; "believing" seems to be a generic term, covering different kinds of occurrences, of which memory and expectation are two. If this is so, difference of tense, in its psychologically earliest form, is no part of what is believed, but only of the way of believing it; the putting of the tense into the content is a result of later reflection. We may accordingly continue to regard images as giving the whole content of what is believed, when this is not expressed in words.

I shall distinguish a proposition expressed in words as a "word-proposition," and one consisting of images as an "image-proposition." As a general rule, a word-proposition "means" an image-proposition; this is the case with false propositions as well as with true ones, since image-propositions are as capable of falsehood as word-propositions.* I shall not speak of the fact which makes a proposition true or false as its "meaning," because this usage would be confusing in the case of falsehood. I shall speak of the relation of the proposition to the fact which makes it true or false as its "objective reference," or simply its "reference." But this will not occupy us till the next section.

The correspondence of word-propositions and image-propositions is, as a rule, by no means exact or simple. A form of words, unless artificially constructed, usually expresses not only the content of a proposition, but also what may be called a

* There are, however, limitations of parallelism due to the fact that words often express also what belongs to the nature of the believing, as well as what belongs to the content. We have just had an instance of this in the case of tense; another will be considered later as regards negation.

“propositional attitude”—memory, expectation, desire, etc. These attitudes do not form part of the proposition, *i.e.*, of the content of what is believed when we believe, or desired when we desire.

Let us illustrate the content of a belief by an example. Suppose I am believing, but not in words, that “it will rain.” What is happening? (1) Images, say, of the visual appearance of rain, the feeling of wetness, the patter of drops, interrelated, roughly, as the sensations would be if it were raining, *i.e.*, there is a complex *fact composed of images*, having a structure analogous to that of the objective fact which would make the belief true. (2) There is *expectation, i.e.*, that form of belief which refers to the future; we shall examine this shortly. (3) There is a relation between (1) and (2), making us say that (1) is “what is expected.” This relation also demands investigation.

The most important thing about a proposition is that, whether it consists of images or of words, it is, whenever it occurs, an actual fact, having a certain analogy of structure—to be further investigated—with the fact which makes it true or false. A word-proposition, apart from niceties, “means” the corresponding image-proposition, and an image-proposition has an objective reference dependent upon the meanings of its constituent images.

(2) *Believing*.—We come now to the question what actually constitutes believing, as opposed to the question of the content believed.

“Everyone,” says William James, “knows the difference between imagining a thing and believing in its existence, between supposing a proposition and acquiescing in its truth. . . . *In its inner nature, belief, or the sense of reality, is a sort of feeling more allied to the emotions than to anything else.*”*

In the main, this view seems inevitable. When we believe a proposition, we have a certain feeling which is related to the content of the proposition in the way described as “believing

* *Psychology*, Chap. XXI, vol. ii, p. 283. James’s italics.

that proposition." But I think various different feelings are collected together under the one word "belief," and that there is not any one feeling which pre-eminently *is* belief.

Before we can begin the analysis of belief, however, it is necessary to consider a theory which, whether explicitly advocated or not, seems implicit in pragmatism, and capable, if true, of affording a strong argument in favour of that philosophy. According to this theory—for which I cannot make any author responsible—there is no single occurrence which can be described as "believing a proposition," but belief simply consists in causal efficacy. Some ideas move us to action, others do not; those that do so move us are said to be "believed." A behaviourist who denies images will have to go even further, and deny image-propositions altogether. For him, I suppose, a belief will be, like a force in physics, an imagined fictitious cause of a series of actions. An animal, desiring A (in whatever may be the behaviouristic sense of "desire"), proceeds to try to realise B; we then say that the animal "believes" that B is a means to A. This is merely a way of collecting together a certain set of acts; it does not represent any single occurrence in the animal. But this view, whatever may be said in its favour where animals are concerned, is condemned as regards human beings by the admission of images. These being admitted, it becomes impossible to deny that image-propositions occur in people, and it is clear that belief has specially to do with propositions, given that propositions occur. And, this being admitted, we cannot make the differentia between a proposition believed and a proposition merely considered consist *only* in the presence or absence of causal efficacy. If we adhere to the maxim "same cause, same effect," we must hold that, if a proposition believed has different effects from those of the same proposition merely considered, there must be some *intrinsic* difference between believing and considering. The fact that believing moves us as considering does not, is evidence of some intrinsic difference between the two phenomena,

even when the proposition concerned is the same in both cases.* This objection seems fatal to the causal-efficacy view as above stated, though I think some things that are true are *suggested* by the view.

It seems to me that there are various feelings that may attach to a proposition, any one of which constitutes belief. Of these I would instance memory, expectation, and bare non-temporal assent. Whether there are others, I do not know. Memory requires for its truth that the objective of the proposition should be in the past, expectation that it should be in the future, while bare assent does not necessitate any special time-relation of the belief to the objective. Possibly disjunctions and implications may involve other kinds of belief-feelings. The chief importance of these different feelings, from our point of view, lies in the difficulty they create in translating the phenomena of belief into words. Tense puts the time-relation, apparently, into the content of what is believed, whereas, if the above theory is correct, tense is primarily embodied in the nature of the belief-feeling. However this may be, we can simplify our discussion by confining ourselves to bare assent, since it is undoubtedly possible to assent to a proposition concerning the past or the future, as opposed to remembering or expecting it.

When a belief, not expressed in words, is occurring in a person, and is constituted by the feeling of assent, what is actually happening, if we are right, is as follows: (*a*) we have a proposition, consisting of inter-related images, and possibly partly of sensations; (*b*) we have the feeling of assent; (*c*) we have a relation, actually subsisting, between the feeling of assent and the proposition, such as is expressed by saying that that is the proposition assented to. For other forms of belief, we have only to substitute other feelings in place of assent.

* Cf. Brentano, *Psychologie vom empirischen Standpunkte* (Leipzig, 1874), p. 268 (criticizing Bain, *The Emotions and the Will*).

It might be urged, as against the above theory, that belief is not a positive phenomenon, though doubt and disbelief are so. It might be contended that what we call belief involves only the existence of the appropriate images, which will have the effects that are characteristic of belief unless some other simultaneous force operates against them. It is possible to develop a behaviouristic logic, starting with the definition that two propositions are logically incompatible when they prompt bodily movements which are physically incompatible. *E.g.*, if one were a fish, one could not at the same time believe the two propositions "this worm is good to eat" and "this worm is on a hook." For beliefs (in this view) would be embodied in behaviour: the one belief, in eating the worm; the other, in avoiding it—always assuming (as behaviourists invariably do) that the fish in question is not tired of life. Without going so far as this, we might nevertheless agree with the passage which James (*loc. cit.*, p. 288) quotes (inaccurately) from Spinoza:—

"Let us conceive a boy imagining to himself a horse, and taking note of nothing else. As this imagination involves the existence of the horse, *and the boy has no perception which annuls its existence* [James' italics], he will necessarily contemplate the horse as present, nor will he be able to doubt of its existence, however little certain of it he may be. I deny that a man in so far as he imagines [*percipit*] affirms nothing. For what is it to imagine a winged horse but to affirm that the horse [that horse, namely] has wings? For if the mind had nothing before it but the winged horse it would contemplate the same as present, would have no cause to doubt of its existence, nor any power of dissenting from its existence, unless the imagination of the winged horse were joined to an idea which contradicted [*tollit*] its existence." (*Ethics*, II., 49, Scholium.)

To this doctrine James entirely assents, adding in italics:—

"*Any object which remains uncontradicted is ipso facto believed and posited as absolute reality.*"

Now if this view is correct, it would seem to follow (though James does not draw this inference) that there is no need of any specific feeling of belief, and that the mere existence of images yields all that is required. The state of mind in which we merely consider a proposition, without believing or disbelieving it, will then appear as a sophisticated product, the result of some rival force adding to the image-proposition a positive feeling which may be called suspense or non-belief—a feeling which may be compared to that of a man about to run a race, waiting for the signal. Such a man, though not moving, is in a very different condition from that of a man quietly at rest. And so the man who is considering a proposition without believing it will be in a state of tension, restraining the natural tendency to act upon the proposition which he would display if nothing interfered. In this view, belief primarily consists merely in the existence of the appropriate images without any counteracting forces.

What most recommends the above view, to my mind, is the way in which it accords with mental development. Doubt, suspense of judgment, and disbelief all seem later and more complex than a wholly unreflecting assent. Belief as a positive phenomenon, if it exists, seems to be a product of doubt, a decision after debate, an acceptance, not merely of *this*, but of *this-rather-than-that*. It is not difficult to suppose that a dog has images (possibly olfactory) of his absent master, or of the rabbit that he dreams of hunting. But it is very difficult to suppose that he can entertain mere imagination-images to which no assent is given. (When we speak of “assent” we mean for the moment merely that influence upon action which might naturally be expected to accompany belief.) The influence of hallucinatory images also fits well with this theory. Such images, it would seem, often become gradually more and more vivid, until at last they exclude the contrary images which would prevent them from influencing action.

I think it may be conceded that a mere image, without the

addition of any positive feeling that could be called "belief," is apt to have a certain dynamic power, and in this sense an uncombated image has the force of a belief. But although this may be true, it does not account for any but the simplest phenomena in the region of belief. It will not, for example, explain either memory or expectation, in both of which, though they differ widely in their effects on action, the image is a sign, something pointing beyond itself to a different event. Nor can it explain the beliefs which do not issue in any proximate action, such as those of mathematics. I conclude, therefore, that there are belief-feelings of the same order as those of doubt or desire or disbelief, although phenomena closely analogous to those of belief can be produced by mere uncontradicted images.

Instances like that of the boy imagining a winged horse are liable to produce a certain confusion. The image of the winged horse of course exists, and if the boy took this to be real, he would not be in error. But images accompanied by belief are normally taken as signs: the belief is not in the image, but in something else that is indicated (or, in logical language "described") by the image. This is especially obvious in such a case as memory. When we remember an event by means of present images, we are not believing in the present existence of the images, but in the past existence of something resembling them. It is almost impossible to translate what is occurring into words without great distortion. The view which I am advocating is that, in such a case, we have a specific feeling, called remembering, which has a certain relation to the memory-image. The memory-image constitutes the image-proposition, but the translation of our belief into words is "something like this *was*," not "something like this *is*," as it would be an assent not of the nature of memory or expectation. And even this translation is hardly accurate, for words point not only to images, but beyond images to what these mean. Therefore, when we use a word as if it meant the image, we

need an unnatural duplication of words in order to reach what the image stands for. This produces the appearance of unexpected complication, leading to an undue lack of plausibility. But the whole question of adapting language to psychology, after all the ages during which it has been adapted to bad logic, is so difficult that I can hardly do more than indicate some of its problems.

IV. *Truth and Falsehood.*

We come now to the question which we left on one side at the beginning of our third section, namely: What is the relation of the content of a belief to its "objective," *i.e.*, to the fact which makes it true or false?

In an earlier paper before the Aristotelian Society,* in criticism of Mr. Joachim, I have given my reasons for holding that truth consists in correspondence rather than in internal consistency. I do not propose to repeat those arguments at present, but shall assume, without more ado, that the truth or falsehood of a belief depends upon its relation to a fact other than itself. This fact I call its "objective." In so doing, I am not following exactly the same usage as Meinong, who holds that there are false objectives as well as true ones, and who, therefore, does not identify his objectives with the facts that make propositions true or false. I cannot call the fact the "meaning" of the proposition, since that is confusing when the proposition is false: if on a fine day I say "it is raining," we cannot say that the meaning of my statement is the fact that the sun is shining. Nor can I use the word "denotation," since that assimilates propositions too much to names and descriptions. But I shall say that a proposition "refers to" its objective. Thus, when we are concerned with image-propositions,

* "On the Nature of Truth," *Proc. Arist. Soc.*, 1907. Reprinted, with some alterations, in *Philosophical Essays*, under the title, "The Monistic Theory of Truth."

“referring to” takes the place of “meaning.” Word-propositions, on the other hand, while also “referring to” objectives, may, in simple cases, be legitimately spoken of as “meaning” image-propositions.

According to the theory of propositions suggested in the previous section, it would be a mistake to regard truth and falsehood as relations of the “ideal” to the “real.” Propositions are facts in exactly the same sense in which their objectives are facts. The relation of a proposition to its objective is not a relation of something imagined to something actual : it is a relation between two equally solid and equally actual facts. One of these, the proposition, is composed of images, with a possible admixture of sensations ; the other may be composed of anything.

Whether an image which is too simple to be called a proposition can be in any sense true or false, is a question which I shall not discuss. It is propositions, and *their* truth and falsehood, that I am concerned with ; whether there is any other truth or falsehood may be left an open question.

There are two different questions in regard to truth and falsehood, of which one may be called formal, the other material. The formal question concerns the relations between the form of a proposition and the form of its objective in the respective cases of truth and falsehood ; the material question, which has been specially emphasised by pragmatists, concerns the nature of the effects of true and false beliefs respectively. In so far as people wish to believe truly (which I am told is sometimes the case), it is because true beliefs are supposed to be, as a rule, a better means to the realisation of desires than false ones. Unless the material question is remembered, the schematic treatment of the formal question may appear very barren and scholastic. Nevertheless, it is to the formal question that I propose to address myself.

The simplest possible schema of correspondence between proposition and objective is afforded by such cases as visual

memory-images. I call up a picture of a room that I know, and in my picture the window is to the left of the fire. I give to this picture that sort of belief which we call "memory." When the room was present to sense, the window was, in fact, to the left of the fire. In this case, I have a complex image, which we may analyse, for our purposes, into (*a*) the image of the window, (*b*) the image of the fire, (*c*) the relation that (*a*) is to the left of (*b*). The objective consists of the window and the fire with the very same relation between them. In such a case, the objective of a proposition consists of the meanings of its constituent images related (or not related, as the case may be) by the same relation as that which holds between the constituent images in the proposition. When the objective is that the same relation holds, the proposition is true; when the objective is that the same relation does not hold, the proposition is false. According to what was said about negative facts in Section I, there is always one or other of these two possible objectives, and the proposition is therefore always either true or false.

But such idyllic simplicity of correspondence is rare. It is already absent in the word-propositions which mean such simple visual image-propositions. In the phrase "A is to the left of B," even if we treat "is-to-the-left-of" as one word, we have a fact consisting of *three* terms with a *triadic* relation, not two terms with a *dyadic* relation. The linguistic symbol for a relation is not itself a relation, but a term as solid as the other words of the sentence. Language might have been so constructed that this should not have been always the case: a few specially important relations might have been symbolised by relations between words. For instance, "AB" might have meant "A is to the left of B." It might have been the practice that pronouncing A on a high note and B on a low note meant that A was B's social superior. But the practical possibilities of this method of symbolising relations are obviously very limited, and in actual language relations are

symbolised by words (verbs and prepositions chiefly) or parts of words (inflections).^{*} Hence the linguistic statement of a fact is a more complex fact than that which it asserts, and the correspondence of a word-proposition with its objective is never so simple as the simplest correspondence in the case of image-propositions.

Again, the case of negative facts and negative propositions is full of complexities. Propositions, whether of images or words, are always themselves *positive* facts. In the case of word-propositions, there are different positive facts (phrases), of which one is true when the objective is positive, the other when it is negative: the phrases "A loves B" and "A does not love B" are both themselves positive facts. We cannot symbolise the assertion that A does not love B by merely having the words "A" and "B" without the word "loves" between them, since we cannot practically distinguish the fact that the word "loves" does not occur between them from the fact that, *e.g.*, the word "hates" does not occur between them. Words and phrases, being intended for communication, have to be sensible; and sensible facts are always positive. Thus there is no identity between the distinction of positive and negative facts and the distinction of positive and negative word-propositions: the latter are themselves both positive facts, though differing by the absence or presence of the word "not."

In the case of image-propositions, there is again a lack of parallelism with negative facts, but of a different kind. Not only are image-propositions always positive, but there are not even two kinds of positive image-propositions as there are of word-propositions. There is no "not" in an image-proposition; the "not" belongs to the feeling, not to the content of the proposition. An image-proposition may be believed or dis-

^{*} This is not wholly true of very primitive languages. But they are so vague and ambiguous that often they cannot be said to have any way of expressing one relation rather than a number of others that might equally be meant by the phrase which is used.

believed ; these are different feelings towards the same content, not the same feeling towards different contents. There is no way of visualising “A-not-to-the-left-of-B.” When we attempt it, we find ourselves visualising “A-to-the-right-of-B” or something of the sort. This is one strong reason for the reluctance to admit negative facts.

We have thus, as regards the opposition of positive and negative, the following different sorts of duality :

(1) Positive and negative facts.

(2) Image propositions, which may be believed or disbelieved but do not allow any duality of content corresponding to positive and negative facts.

(3) Word-propositions, which are always positive facts, but are of two kinds, one verified by a positive objective, the other by a negative objective.

Thus the simpler kinds of parallelism between proposition and fact are only to be looked for in the case of positive facts and propositions. Where the fact is negative, the correspondence necessarily becomes more complicated. It is partly the failure to realise the lack of parallelism between negative facts and negative word-propositions that has made a correct theory of negative facts so difficult either to discover or to believe.

Let us now return to positive facts and beliefs in image-propositions. In the case of spatial relations, we found that it is possible for the relation of the constituent images to be the same as the relation of the constituents of the objective. In my visualising of A to the left of B, my image of A is to the left of my image of B. Does this identity of relation, as between the image-proposition and its objective, ever occur except in the case of spatial relations ?

The case which it is natural to consider next is that of temporal relations. Suppose I believe that A precedes B. Can this belief have for its content an image of A preceding an image of B ? At first sight, most people would unhesitat-

ingly reject such an hypothesis. We have been told so often that an idea of succession is not a succession of ideas, that we almost automatically regard the apprehension of a sequence as something in which the earlier and later parts of the sequence must be simultaneously presented. It seems rash to challenge a view so generally regarded as unquestionable, and yet I cannot resist grave doubts as to its truth. Of course it is a fact that we often have successive images without the belief that their prototypes have the same time-order. But that proves nothing, since in any case belief is something which has to be added to an image-proposition. Is it certain that we cannot have an image of A followed by an image of B, and proceed to *believe* this sequence? And cannot this *be* the belief that A precedes B? I see no reason why this should not be the case. When, for example, I imagine a person speaking a sentence, or when, for that matter, I actually hear him speak it, there does not seem, as a question of empirical fact, to be any moment at which the whole sentence is present to imagination or sense, and yet, in whatever may be the usual meaning of the phrase, I can "apprehend the sentence as a whole." I hear the words in order, but never the whole sentence at once; yet I apprehend the sentence as a whole, in the sense that it produces upon me the intended effect, whatever that may be. You come to me and say: "Your roof has fallen in, and the rain is pouring down into the rooms, ruining all your furniture." I understand what you say, since I express consternation, ring up the landlord, write to the insurance company, and order a van to remove my belongings. Yet it by no means follows that the whole sentence was imaginatively present to me at any one moment. My belief in your statement is a causal unit, and it is therefore supposed to be a unitary occurrence. But in mental affairs the causal unit may well be several events at different times. This is part of Bergson's point about repetition; it is also suggested by the law of habit. It may well turn out to be one of the fundamental differences between physics and

psychology. Thus, there seems no good reason why, when we believe in a succession, there should be any one moment within which the whole content of the belief is existing. The belief in a succession may quite well be itself a succession. If so, temporal relations, like spatial ones, allow the simplest type of correspondence, in which the relation in the image-proposition is identical with that in the objective. But I only wish to suggest this view as a possible one: I do not feel prepared to say with any conviction that it is in fact true.

The correspondence of proposition and fact grows increasingly complicated as we pass to more complicated types of propositions: existence-propositions, general propositions, disjunctive and hypothetical propositions, and so on. The subject is important, and capable, I believe, of throwing much new light on logic; but I shall not pursue it here.

The general nature of the formal correspondence which makes truth or falsehood can be seen from the simplest case: the case of a dyadic relation which is the same in the fact and in the image-proposition. You have an image of A which is to the left of your image of B: this occurrence is an image-proposition. If A is to the left of B, the proposition is true; if A is not to the left of B, it is false. The *phrase* "A is to the left of B" means the image-proposition, and is true when this is true, false when this is false; on the other hand, the phrase "A is not to the left of B" is true when the image-proposition is false, and false when it is true. Thus for this simplest case we have obtained a formal definition of truth and falsehood, both for image-propositions and for word-propositions. It is easy to see that the same *kind* of definition can be extended to more complicated cases.

It will be observed that truth and falsehood, in their formal sense, are primarily properties of propositions rather than of beliefs. Derivatively, we call a belief true when it is belief in a true proposition, and a disbelief true when it is disbelief in a false proposition; but it is to propositions that

the *primary* formal meanings of "truth" and "falsehood" apply.

But when we come to what gives importance to truth and falsehood, as opposed to what constitutes their formal definition, it is beliefs, not propositions, that are important. Beliefs influence action, and the effects of true beliefs, I am told, are more agreeable than those of false beliefs. The attempt to *define* truth in this way seems to me a mistake. But so long as we confine ourselves to the formal definition of truth, it is difficult to see why any one should take an interest in it. It is therefore important to remember the connexion of beliefs with action. But I do not think either that the pleasant effects of a belief are alone a sufficient verification of it, or that verification can be used to *define* truth. There are true propositions, for example, about past matters of fact, which cannot be verified. The formal definition of truth by correspondence of a proposition with its objective seems the only one which is theoretically adequate. The further inquiry whether, if our definition of truth is correct, there is anything that can be known, is one that I cannot now undertake; but if the result of such an inquiry should prove adverse, I should not regard that as affording any theoretical objection to the proposed definition.

II. SYMPOSIUM: TIME, SPACE, AND MATERIAL: ARE THEY, AND IF SO IN WHAT SENSE, THE ULTIMATE DATA OF SCIENCE?

By A. N. WHITEHEAD, SIR OLIVER LODGE, J. W. NICHOLSON, HENRY HEAD, MRS. ADRIAN STEPHEN, and H. WILDON CARR.

I. *By* A. N. WHITEHEAD.

THE concepts of modern science are founded on naïve common-sense as modified by Greek thought, mediæval scholasticism and renaissance and seventeenth century philosophy. In practice, every scientific treatise assumes as ultimate the concepts of material—here used as a more general term than matter—and of time and of space.

Force, velocity, kinetic energy, potential energy, and life are properties expressive of many-termed relations between materials and times and spaces. Namely, force, velocity, energy, and life are (in the sense in which they enter into physical science) somewhere in space at some time, and express relations of materials *inter se*, and also to various times and various spaces.

Time may be conceived either as a succession of instants of time or as a passage of periods of time. Periods of time overlap and contain one another, and thus have complicated relationships. Accordingly, the simple mathematical concept of time, as a simple linear series of durationless instants with certain mathematical properties of serial continuity, has tacitly crept from books on mathematical physics into general scientific thought as expressive of the ultimate structure of time.

The difficulty of this view is that velocity cannot be defined by simple reference to one instant. Its definition essentially involves a neighbourhood of instants. Nature at an instant is

simply a definite configuration of material in space, with certain space relations. Velocity and kinetic energy have evaporated in this ultimate concept of the instant. A full description of nature has (on this view) an infinite number of chapters, each chapter being the full description of the configuration of material at some one instant.

But there is an appendix to this book of nature, written either by God's foresight or by man's subsequent reflection. This appendix contains the comparison of chapter with chapter. In this appendix velocity, kinetic energy, acceleration, force, and mass make their appearance. In fact, the appendix, when completed, is a treatise on mathematical physics, with a preface on causation written by the philosophers.

Unfortunately in this book of nature the biologists fare badly. Every expression of life takes time. Nothing that is characteristic of life can manifest itself at an instant. Murder is a prerequisite for the absorption of biology into physics as expressed in these traditional concepts.

This account of nature and of physical science has, in my opinion, every vice of a hasty systematisation based on a false simplicity; it does not fit the facts. Its fundamental vice is that it allows of no physical relation between nature at one instant and nature at another instant. Causation might be such a relation, but causation has emerged from its treatment by Hume like the parrot after its contest with the monkey. The fact is that this account has ruled out in advance any physical relationships between nature at different instants, and all that is left to connect nature at one instant with nature at another instant is the identity of material and the comparisons of the similarities and differences made by observant minds. Also time as a succession of instants corresponds to nothing which falls within my own direct knowledge. I can only think of it metaphorically either as a succession of dots on a line or as a set of values of an independent variable in certain differential equations. I cannot dissociate time from concrete

nature, and then know nature as at an instant of time; nor am I aware of any fact which is instantaneous nature. Again, in this account also the fundamental physical quantities, such as velocity, energy, etc., are excluded from nature and become merely expressive of the spectators' comparisons. There are also difficulties connected with the concept of space, which are omitted for the sake of brevity.

I believe that the account of nature which has been outlined and criticised above is the fundamental view which has pervaded scientific thought. It has not been held consistently, because, owing to its inadequacy, it is impossible to talk of nature consistently in terms of this concept. But in the case of the majority of scientists, so far as their ideas are clear they seem to mean that.*

Let us try and find our way to another account. The chief strength of the belief in the instant of time as an ultimate fact is acceptance of the present as being a present instant which we directly know. But the psychological doctrine of the specious present warns us that this is a case of warping observation by theory. What we are immediately aware of is a duration of nature with temporal extension. We are not aware of two facts, namely, a period of time and also of things existing within that period. We are aware of nature enduring, or—in other words—of the passage of nature. Thus the present contains within it antecedents and subsequents, and the antecedents and the subsequents are themselves endurances with temporal extensions. Nature at an instant is a complex abstract conception which is useful for the simple expression of certain natural relations.

Thus, awareness of nature begins in awareness of a whole which is present. Call this present whole of nature a

* I have stated these criticisms of traditional concepts at greater length in *An Enquiry into the Principles of Natural Knowledge*, shortly to be published by the Cambridge University Press. In subsequent references it is cited as *Enquiry*.

“duration.” A duration is a temporal slab of nature ; and is all that there is, subject to the temporal limitation inherent in the awareness. This awareness of the whole is directly sensed, and is not a detailed discrimination of its parts. This sense for the being of nature is accompanied by a diversification of the duration into parts, which are more or less clearly discriminated. The awareness of nature essentially requires both factors, namely, the sense for the whole and the discrimination of parts. The parts are known as “there,” namely, there in the whole. These parts of a duration are the finite events, which have indistinct demarcations simply owing to lack of perceptive vividness and of discriminative force. An example of such an event is all nature within the Roman Senate house during the death of Julius Cæsar. Durations are events with a quality of unboundedness. They form the sole class of infinite events ; other events, such as the death of Cæsar, are finite events.

Events, infinite and finite, are the primary type of physical facts. The two fundamental relations which they can have to each other are here called “extension” and “cogredience.”

One event, e , may extend over another event, e' . If this relation holds, e' is said to be part of e , and e is a whole of which e' is a part. Thus extension is the relation of whole event to part event, and is a relation which is special to events. For example, all nature within the Senate house during Cæsar's death extends over all nature within Pompey's statue during that death. This relation of extension is the common root from which extension in time and extension in space both spring. It is the essence of externality.

Two durations which belong to the same time-system are *either* completely separate, *or* one extends over the other, *or* there is a third duration which both extend over and which is their common part. A moment of a time-system is a route of approximation to the non-existent ideal of a duration without temporal extension. This route is composed of an infinite series of durations, extending over each other, the earlier in the

series over the later, and so that there is no duration which they all cover. Such a series defines an instant of time, and will be here called a moment. All observation which endeavours to gain accuracy by instantaneousness is comprised within a duration as far down a momental series as possible, and is dated at that moment. Thus "nature at a moment" is the ideal simplicity of natural relations to which we approximate as we proceed along that momental series.

Nature at a moment exhibits (among other things) the relations of a three-dimensional space: This is instantaneous space. The instantaneous points of such a space are routes of approximation constructed on the same general principle as moments; namely, a point-series is an infinite series of events, each event extending over all the events subsequent to it in the series; the whole series converges towards an ideal of an event of no extension. The details of the definition can be omitted here. An instantaneous point is better named an "event-particle." Event-particles form a four-dimensional manifold which is divided into three-dimensional instantaneous spaces which lie within the several moments.

According to the concept of time, which until recently was unquestioned, there should be but one time-series of moments, and any two moments should be "parallel" in the sense that no event-particle could lie in two distinct moments. But the more recent electromagnetic theory of electricity requires us to assume an infinite number of distinct time-series. Each time-series would (on this theory) consist of parallel moments, exactly like the single time-series of the older theory. But if α and α' be distinct time-series, and M be a moment of α and M' of α' , then M and M' intersect in the sense of containing some event-particles common to both.

This conception of distinct time-series is paradoxical and is not yet fully accepted. It explains some perplexing observations in physics, and also enables intelligible accounts to be given of the nature of flatness and straightness in instantaneous

space, and of the meaning of the time-less space of physics, and of the reason for "Newtonian" (or "Galilean") axes, for reference to which Newton's Laws of Motion hold (cf. *Enquiry*). But it necessitates the paradox that two event-particles which are simultaneous (*i.e.*, co-momental) for time-system α will not in general be simultaneous for another time-system α' ; though for ordinary observation the lack of simultaneity will be inappreciable. This requires that we distinguish between the creative advance (or passage) of nature and any special time-system α . The group of all time-systems embodies the physical properties of this creative advance. But any one time-system is not itself this advance; it is simply an embodiment of some of the physical properties of nature resulting from this creative advance. On the old theory of time, the time-system is the creative advance. When once the distinction is made between the creative advance and the separate time-systems, the paradox of a multiplicity of time-systems is less acute.

Some pairs of event-particles are necessarily sequential in all time-systems, but some pairs are simultaneous in some time-systems and sequential in others, and also in these other time-systems may have their sequence inverted. For ordinary perception pairs of the later type appear as simultaneous.

I shall call an element of nature "completely concrete" where, existing as it does exist, it could be all nature. For example, on the old "single time-system" theory a duration is completely concrete. Its first moment might be the moment of creation, and its last moment the day of judgment. But on the theory of the multiplicity of time-series a duration is not completely concrete; the creative advance of nature is fatally excluded if we assign two moments of one time-series as a beginning and an end, since this advance requires the whole group of time-series for its expression. For example, the last moment of a finite event is different for each time-system, since no moment belongs to two time-systems. Thus, on the newer theory, a beginning or an end of nature within time is

excluded. I regard this conclusion as a merit in the new theory.

Cogredience is the other relation which two events can have to each other. Cogredience directly holds between a finite event and a duration, and only mediately between two events which are cogredient to the same event. Cogredience is the relation of absolute spatial position within a duration; namely, an event is cogredient with a duration when all sections of it made by durations, which are parallel parts of the given duration, exhibit the same meaning of "here within the duration." Cogredience is immediately known to us in perception. Our awareness of nature is not a survey from without, but an awareness of a special event, the "percipient event," in respect to its own internal relations and qualities of its parts *inter se*, and also in respect to its external relations to other events. This percipient event is, roughly speaking, the bodily life of the perceiver. Throughout a sufficiently small duration the percipient event is unequivocally "here." Unless that be the case, there is no meaning to the idea "here," which after all, is the most insistent of all concepts. The essence of the new theory is that the hereness of the percipient event is in respect to a selected duration in some special time-system, namely, that duration with which it is cogredient. This explains the palpable fact that though we are moving we are always "here." In such a case (when we conceive ourselves as moving) there is a dual perception of cogredience, namely, the cogredience proper to the percipient event and the cogredience proper to certain other events.

From cogredience and extension the whole metrical theory of time and space can be deduced (cf. *Enquiry*). We should speak more accurately in the plural, namely, of "times" and "spaces" and not of time and space. For each system of parallel durations corresponds to one definite time-system of parallel moments, each such moment being a three-dimensional instantaneous space; and each such system allows a time-less space, the

space of physical science, to be constructed, with its own time-less points, time-less straight lines, and time-less planes proper to it alone.

In diversifying nature into entities, events are not the only type of entities thus disclosed. There are entities which we recognise. Such entities we will call "objects." They might have been named "recognita," but we choose the term "object" as being simpler. An event is essentially not an object. We live through events, and they pass; but whatever is repeated is necessarily an entity of another type. In order to recognise an object it is not necessary to have perceived it before. An object is recognised within the present duration of its perception. For this present duration includes antecedent and subsequent durations; and the recognition of the object in the present is essentially a comparison of the object in the antecedents and subsequents within the present, though memory may also be a factor in the recognition.

Events may be looked upon as relations between objects, and objects may be looked upon as qualities of events. But both these points of view lead us into difficulties, and (at any rate for physical science) it is simpler to look on objects and events as fundamentally different sorts of entities disclosed in nature with certain determinate relations to each other.

Also there are an indefinite number of distinct sorts of objects. It is only necessary here to consider a few important types. Objects of any one type have relations to events which are radically distinct from those which objects of any other type bear to events. Furthermore, the concrete whole disclosed in awareness is nature, and nature exhibits both events and objects. To think of nature as the mere passage of events without objects, or as a mere collection of objects unrelated to events, is an abstraction.

Objects of the primary type will be called "sense-objects." All other objects in nature presuppose the perception of sense-objects. A sense-object is a specific sensation or feeling

perceived as situated in an event. For example, the colour red of a definite shade, and the peculiar feel of velvet, and the sensation of heat are all sense-objects. We recognise them and locate them in events which we will call their situations.

But this account of the relation of a sense-object to events is much too simple. The relation is a complicated many-termed relation involving in some way all events. The terms in this relation are (i) the sense-object, (ii) the percipient events, (iii) the situations, (iv) the active conditioning events (subsequently called the "active conditions"), (v) the passive conditioning events (subsequently called the "passive conditions"). In this analysis, one event may sustain many rôles. We take a definite sense-object, say redness of a particular shade, and one definite percipient event, which is the standpoint of the awareness of a definite percipient. Then, granting certain active conditions (*e.g.*, a translucent material and a red-hot poker) and the implied existence of all nature (comprising the passive conditions), redness is situated in certain events in reference to that percipient event. Thus the relation can be summarised as,—Sense-object O , with situation σ , for percipient event π , with active conditions $\gamma_1, \gamma_2, \dots$. In this summary, reference to the passive conditions may be dropped as being a necessary presupposition in perception, and for simplicity we consider only one situation. The influence of the passive conditions is shown by the provision of time and space for the general setting of the occurrence. The situation of a sense-object is necessarily within the duration with which the percipient event is cogredient, *i.e.*, speaking loosely, the events are simultaneous. The necessary reference of the situation to a particular percipient event with assigned conditions is understood by remembering that in the perception of redness a mirror may be among the conditions. Thus the redness of the poker will be situated behind the mirror for that percipient event. This possibility brings out the fact, that being the situation of a sense-object may be a very trivial property of the event which is the situation,—at least from the

point of view of the event, if we can imagine it thinking. But from the point of view of the percipient whose awareness is derived from that percipient event the fact is important, since his knowledge of nature is entirely derived from an analysis of such situations. Furthermore, there may be no poker and no mirror, an abnormal percipient event or abnormal conditions may generate the perception without any of the usual conditions. Redness has still that situation for that percipient event; the delusion is merely the false judgment that there are certain conditions which are in fact non-existent; namely, all perception is what it is, and the sense-object has the situation as perceived. The only error which can arise is a misjudgment as to the conditions; these conditions may be antecedent potations of alcohol and not the almost simultaneous events comprising the existence of the hot poker. The foundation of science is the careful analysis of the types of conditions and the types of percipient events which lead to perceptions of specific sense-objects in definite situations.

The preceding discussion shows us that there is a sort of sliding scale of normality in the conditioning events necessary for the perception of a given sense-object in a situation with a definite relation to the percipient event. For example, in the case of the redness of the poker, there are the conditions for direct vision, the conditions for vision by reflection in a mirror, the conditions for alcoholic delusion. The greater the abnormality, the greater is the difficulty in formulating conditions which are both necessary and sufficient. The chief danger in the philosophy of science is the concentration of interest on the most normal conditions for perception.

The next type of objects is that of "perceptual objects." A perceptual object is the determinate association of sense-objects in a series of situations which are strung together into a continuity by mutual overlapping and can thus be synthesised as one prolonged event.

The perception of a perceptual object is radically different

from that of a sense-object. It involves the perception of sense-objects and something more. This additional element in the perception will be called the "conveyance" of one sense-object by the perception of another sense-object. For example, you see a horse. Primarily you have seen the colour of the horse in a certain situation. But it is the horse you have perceived and not merely his colour. A set of faintly discriminated sense-objects have been "conveyed" to you by the sight of the colour. Perhaps, if your perceptions are very vivid, you may feel yourself patting him. But in general the sight of the colour merely conveys a nameless complex of feeling which, combined with the sight of the colour, is the perception of the horse. The function of judgment is to foment or to inhibit or to divert this conveyance. You do not perceive a horse because you judge it to be a horse, but because you feel it to be a horse. Judgment helps or obstructs this feeling, and adds to the immediate perception the recollection of the many qualities assigned to horses in natural history books. In our subsequent reflections we usually adorn the crudely perceived perceptual object with some such pride of knowledge.

Perceptual objects are divisible into two classes, delusive perceptual objects and physical objects which are non-delusive objects. A delusive perceptual object is an object of which the perception and situation are essentially referred to one percipient event with its actual conditions of perception. A physical object is perceivable in the same situation from the standpoint of an indefinite number of percipient events in suitable relations to the situation and with normal conditioning events. There is an element of delusiveness in all perception, illustrated by the time-lags in the perception of stars. Our knowledge of nature rests on the assumption that ordinarily this delusiveness is negligible.

Physical objects form the bridge between nature as appearance and nature as a complex of conditions for appearance. The objects whose relations to events make those events to be

conditions for the appearance of sense-objects are called scientific objects. Physical objects are both apparent objects and scientific objects. Thus the mirror is an apparent object which causes the event which is its situation (*i.e.*, the fact that it is where it is during the time when it is) to be a condition for the sight of the redness of the poker in a situation behind it.

According to scientific theory and to common-sense the event which is the situation of a physical object is the chief conditioning event for the appearance of that physical object. To express these conditions, primarily observed in terms of sense-objects and physical objects, science has conjectured other types of scientific objects, in particular, molecules and electrons. In the present stage of science, electrons are the ultimate scientific objects, and for brevity we consider them only.

Any single electron has relations to all events. In relation to this electron there are two classes of events : (i) the occupied events, and (ii) the unoccupied field. The occupation is expressed by a certain quantitative character of the occupied event which is the charge forming the nucleus of the electron ; and the character of the unoccupied field, due to its relation to the electron, is expressed by the electric and magnetic forces. The electric and magnetic field expresses the electron as representing events in their character of active agents in the creative advance, the charge expresses the electron as representing events in their character of being receptive of modification in their passage to other events.

In this account of scientific principles the material ether has disappeared. It is replaced by an ether of events, which is formed of events whose character is expressed by the properties of the electro-magnetic field. The continuity of nature arises purely from the extensional properties of events. Only events have parts ; and only events are directly in time and space, in the sense that time and space are expressions of certain extensional and cogredient properties of events. The atomic

properties of nature entirely arise from objects. Objects have no parts, though their situations have parts. Objects are only mediately in time and space through their relations to events.

An object which (in some sense) is located in an event extending throughout a duration is not necessarily located in any slice of that event contained in a duration which is a part of the original duration. For example, a molecule of iron and a tune both require a minimum time in which to express themselves. We may call such objects "non-uniform." On the other hand, perceptual objects appear as uniform objects; namely, if the object is situated in an event which extends throughout a duration, then any duration, however small, which is contained within that duration, cuts the event in a slice which is a situation of the same perceptual object. It is always assumed that the ultimate scientific objects (at present electrons) are uniform objects. There is thus a hierarchy of stages, from the electrons which are uniform objects, to the molecules which are non-uniform objects with time-minima dependent on the periodic times of their orbital swarms of electrons, to physical objects which are uniform objects, regaining uniformity by exhibiting the average effects of billions of molecules. This hierarchy is represented in mathematical physics by Lorentz's hierarchy of microscopic and macroscopic equations, where the macroscopic equation is due to the employment of coarser mathematical machinery than that employed in the formation of equations which are microscopic relatively to it. Thus a macroscopic equation gains its macroscopic character by averaging effects which are dealt with individually in relatively microscopic equations. The macroscopic treatment of nature is not purely loss in the mere averaging out of differences. It makes evident objects (*e.g.*, molecules, physical objects, and living beings) which would be missed by an observer who insisted on contemplating nature exclusively through the high-powered microscope required for its microscopic treatment.

I cannot see any basis for the habitual assumption that the ultimate scientific objects should be uniform. Whenever non-uniform objects emerge, then time-minima become important in physics (*i.e.*, *quanta* of time, in the modern nomenclature). The atomic property of objects and the non-uniformity of some types of objects are obviously the basis of the quantum properties of nature which are assuming such an important position in modern physics.

The theory of material is the theory of uniform objects which endow the events in which they are located with a quantitative character. For example, an electron gives such a character to the occupied events, namely, the electric charge. Thus the concept of a quantity of material with a definite spatial configuration at an instant of time is a very complex abstraction, and is by no means a fundamental datum for science.

II. *By* Sir OLIVER LODGE.

THE BARE ELEMENTS OF THE SUBJECT.

It is possible that a life-long attention to physics may have led me to formulate elementary and fundamental things with a certain definiteness which may be useful, if anyone is patient enough to forget that he already necessarily knows a great deal about them—in perhaps a less precise manner. If at any place I am wrong, precision of statement must assist the detection of error.

I have long been impressed with a conviction which, whether it be orthodox or otherwise, I feel sure is essentially true, though probably it may be expressed in more precise philosophic language, namely, that our primary apprehensions or direct material experiences consist of motion and force,—or, more in detail, rapidity of motion, intensity of force, and duration of effort. Muscular exertion, free or unopposed, gives us the sense of motion (subsequently analysable into a function of space and time, but primarily a direct perception); muscular exertion impeded is precisely what we mean by force; and muscular action fatigued suggests duration. These things we apprehend directly. Time and space and matter are inferences, abstractions based upon these primary sensations, and are intended to explain them or relate them to the external world. We know when we are running quickly, and after further muscular experience we may be said to know when a bird flies quickly past us. We also know when we have been running or walking for a long period. We have thus a sense of speed and a sense of duration. From them we analyse and build up our conceptions of space and time. The fact that space and time are derived notions or inferences need not make

them any the less real,—they are as real as any abstractions can be.

We have also a sense of force; we encounter reaction and obstruction, and from this we build up a conception of matter. By force I do not mean energy, nor any other inaccurately-worded substitute: I mean definitely *force*, in the sense of obstructive or elastic reaction to muscular exertion. This reaction we attribute to matter and regard as a consequence of material *inertia*, a property which demands muscular exertion or its equivalent to effect any change of motion.

Inertia is the passivity of matter. Anything subject to balanced forces, like a steady-going train or ship, is moving simply by its own inertia, and will continue in that motion until forcibly stopped. We ourselves, travelling through space at many miles a second, are moving simply by our own inertia, not because we are propelled. In so far as the forces acting on us are not exactly balanced, we revolve round certain centres in regular diurnal and annual orbits. Alteration of the movement of matter—rearrangement or propulsion or both—constitutes our sole material activity: hence the obvious importance of everything concerning it. That there should be a Ministry of Locomotion is eminently reasonable.

I regard therefore as the primary data of science, force and motion; including in the latter term speed, directly apprehended, and duration, which is an outcome of our sense of fatigue.

Given these primary experiences, the secondary abstractions based upon them, time, space and matter, are more convenient for practical work, since they relate themselves objectively to the external world and do not depend so manifestly upon our subjective impression of it.

Speed is the kinetic element of effort.

Force is the static element of effort.

Time is the duration element of effort.

Space is a compound inference, being the product of speed

and duration. A "light-year," as the measure of the distance of a star, precisely corresponds to this method of regarding space.

Matter appeals to us as the interfering alien substance which exists in space and affects our sensations,—initially the sense of force, but ultimately every kind of sensation. Gradually we become aware that matter constitutes our own machinery, both muscular and sensory, and that it is intimately associated even with our mental furniture. Our very senses are material: from peripheral organ up at least as far as brain structure. A definition of matter is—that which can be moved.

Anything physically existent which does not affect our senses—like the ether—remains to be discovered or inferred by more recondite processes. For though the eye is really stimulated by ether tremors, and is thus in a sense an ethereal sense organ, it gives us no direct information of that kind: it informs us only of the material bodies which have emitted or modified or scattered certain specific kinds of radiation. It does not tell us anything about the radiation itself.

The product of force and time is a further derived function called impulse, and its result is the product of inertia and velocity called momentum; which is a measure of the amount of motion caused by the impulse. Internal or balanced forces have no effect on momentum; even an explosion leaves unaltered the average momentum of the fragments of a flying shell.

The product of force and space is another derived function, a measure of effective exertion, and is known as *work*. Work is related to energy in a manner which is often confused. It is a measure of energy in a sense, but is in no way identical with it. The two factors of this product, work, isolated from each other, are static and kinetic energy respectively. Static energy is sometimes called potential; but the truth is that both forms of energy are potential work.

When work is done, energy is transformed and transferred, and the amount of energy so transferred is measured by the work done.

Inertia is that ingredient or constituent in the motion of matter which confers upon it persistence. Its definition is the product of force and duration divided by the resulting gain of velocity; or, more briefly expressed, the ratio of resultant force to the acceleration thereby produced. This ratio, for a given piece of matter, is called the inertia of that piece of matter, and by Newton's second law is asserted to be constant. Modern electrical theory modifies this constancy, at least for electrons; and on the electrical theory of matter, inertia is a function of speed, but not noticeably so except at excessively high speeds, approaching that of light.

All this, which is intended to be accurately worded, is very simple. True, but simplicity ought not to be an opprobrious epithet. If fundamental things are not simple, how is human knowledge to progress into the difficult things beyond? Meanwhile are we sure that, simple as they are, we always use the terms "force," "energy," and "work" correctly?

Activity is rate of doing work, or the work done divided by the time taken. It is a product of force and velocity.

The force-factor without the speed-factor, with only the potentiality of the speed-factor understood, is exactly what is meant by static or potential energy. The measure of the energy is the force multiplied by its range of action, like a weight multiplied by the vertical height down which it can fall.

The velocity-factor without the force-factor, with only the potentiality of the force-factor guaranteed by reason of the momentum of the moving body, is exactly what is meant by kinetic energy. Its measure is the momentum multiplied by the average speed with which it could be uniformly brought to rest. ($mv \times \frac{1}{2}v$).

There is no activity—no work done—by either factor as long as the other factor is withheld. Supply the other factor

and activity results; work is immediately done, and energy passes from its static to its kinetic form, or *vice versâ*, and is at the same time transferred from one body to another.

Kinetic energy seems easy and familiar because it is possessed by the matter which we can touch and move. It appeals to our sense of motion.

Potential or static energy seems more mysterious, because, though it appeals to our sense of force, it turns out not to be really possessed by ordinary matter but by a material something which occupies the interstices of ordinary matter and fills otherwise empty space. All forms of static energy—strain and stress in general—belong to the ether; strictly speaking matter cannot be strained, only rearranged in position; and unless the ether is taken into account the scheme of physics is unintelligible.

Devices have been invented for dispensing with the ether—the Principle of Relativity, for instance—but they are fearfully complicated; and if posterity is forced to accept and employ them, I fear that a damaging blow will have been dealt at physics.

May I parenthetically urge philosophers to be on their guard against any system which introduces discontinuity into space or time, or even energy? Matter is discontinuous, electricity is discontinuous, I venture to say that real number is discontinuous; but space and time and ether are continuous. Energy may acquire a discontinuous aspect in its relation with matter, and the *quantum* is an important metrical fact, but it is explicable in terms of the atom or electron, and is not a feature in energy itself.

Time is absolutely continuous, however it be measured and expressed numerically.

Number—by which I mean real number, an integer or any vulgar fraction (*i.e.*, any terminating or circulating decimal, anything expressible by a finite series of figures)—is essentially discontinuous; the counting of units sometimes imposes on a

continuous thing an appearance of discontinuity, but in such cases the units are artificial conveniences ingeniously contrived for purposes of practical measurement. There is nothing naturally and essentially countable about temperature, though it can be measured in degrees; nor about an angle, a length, or an area; nor about time, though it can be measured in seconds. But there is something essentially countable about stars and planets and atoms of matter and electrons; also about vibrations and revolutions; and so in a secondary sort of way we may find it convenient to deal with countable fractions or quanta of energy.

The Quantum.

The term quantum has been so recently introduced into physics that a very elementary exposition of the idea underlying the term is permissible.

Ordinary stable equilibrium may be of two kinds:—the kind typified by a portion of a sphere on a table, which inclines with the slightest impulse, or a simple pendulum which tilts a little to the smallest force—that kind of thing, on the one hand; and on the other, the kind typified by an up-ended block, or brick, or pillar, on which a gentle lateral touch produces no effect, but which a finite impulse can tilt and upset. A portion of energy, equal to the weight multiplied by the rise of its centre of gravity as it revolves round the nearest edge, is needed to upset the block; a finite force is needed even to tilt it at all. A detonator usually requires a blow of certain violence before it causes the explosion. A finite amount of energy is needed to open a door or break open a box. So, to expel an electron from an atom, a finite amount of energy has to accumulate before the catastrophe occurs. The energy required to pull a trigger or to liberate an electron bears no proportion to the magnitude of the resulting explosion, but a finite effort is necessary; and, inasmuch as it has been recently discovered that the quantity of energy required to undermine atomic constitution is remarkably definite and

uniform—for all elements over a great range of apparently diverse circumstances,—the quantum, originally devised or discovered by the eminent Professor of Physics and Head of the University of Berlin, von Planck, has recently taken a secure place in the scheme of physics. It may be regarded as one of the natural units, like the natural unit of electricity and other natural units associated with the atom of matter. Natural units are not numerous, and whenever they occur they are important. The really important thing about the doctrine of the quantum, in recent physics, is that it appears to be a universal constant, applicable to every kind of matter and all sorts of circumstances. This striking fact is evidently somehow due to the universal prevalence and unique identity of the electron, or fundamental unit of electric charge, the basis—according to modern views—of the whole structure of matter. One attractive theory identifies the quantum with the angular momentum of an electron in its orbit inside an atom; a quantity which is either constant or proceeds from orbit to orbit by equal steps, *i.e.*, by a simple multiple of the fundamental unit.

The idea, at first superficially suggested by the facts, that energy itself exists in countable portions or indivisible units, is, I believe, not likely to establish itself permanently. The countable or discontinuous aspect of it is a property of the electron. At least that is what I hold.

SUPPLEMENTAL MINOR OBSERVATIONS.

Past, Present, and Future.

Is there any sense in which there can be a natural unit of time as there is a natural unit of electricity? I think not. What do we mean by the present?

A mathematical slice or section without parts or magnitude, is the ideal answer. But such an answer is manifestly inadequate to express our actual conception of the present: there must be an element of “before” and “after” in our idea of it.

It is like a travelling slice or section of some breadth, like a microtome section. It is like our view of the landscape as we travel; we explore the country in portions, but not in infinitesimal portions.

Mathematically "the present" is an actual instant of time, an infinitesimal element in a uniformly flowing quantity.

Psychologically the conception of the present has some extension, like the view from an air-ship: how much, depends upon circumstances; and in discussing that psychological question, we are outside the domain of physics. I understand that Dr. Whitehead is dealing with this subject.

Apprehension of Motion and Force.

I want to repeat that I do not think we apprehend velocity as $v = ds/dt$; we apprehend velocity directly as a primary sensation, and our subsequent mental progress is rather to be symbolised by $s = \int v dt$.

We also apprehend force directly; and by combining this with the idea of change of velocity, dv/dt , we get the secondary or derived conception of inertia, and find it to be a fundamental property of what we call matter.

Remarks on Inertia.

The simplest illustration or example of inertia is the state of a train or ship moving at a steady smooth speed. The propelling force is then exactly counterbalanced by the resisting forces, and the resultant or effective force is *nil*. The motion continues, not because of any propulsion, but because there is nothing to stop it. Such motion is perpetual, and is illustrated by our own bodily behaviour on the planet. We are rushing through space at possibly much more than 19 miles a second, but we are not propelled by anything; we continue moving simply by our own inertia. A steady electric current is in the same predicament.

Recently the attempt has been made to explain inertia

electromagnetically: given the electric theory of the constitution of the atomic unit of matter. It appears to be due to the reaction of the magnetic field essentially surrounding every current, the said current being apparently always the convection of an electric charge. Electric inertia has long been known as self-induction, and was perceived to be analogous to material inertia; it is turning out to be, in all probability, the very thing itself. But, supposing this established, it cannot be regarded as an ultimate explanation; it is an illuminating generalisation, and a unification of apparently different things, but I see no way of explaining inertia ultimately. It can only be relegated to the universal medium and be regarded as one of the properties of the ether of space. We must make the hypothesis that electrons and atoms are peculiarities or singular points in a continuous very massive ether, points or structures which acquire their clear and certain inertia from its fundamental and inaccessible property. We can hardly experiment directly upon the ether, for we cannot move it, but we can adduce the analogy of an unmassive sphere moving through a perfect fluid and thereby acquiring an apparent or effective inertia equal to that of half the bulk of fluid displaced. If the fluid had no inertia there would be no such effect.

I conceive that ultimately all the properties of the material universe will be expressible in terms of the fundamental and omnipresent ether of space.

III. *By* J. W. NICHOLSON.

It is a matter of common knowledge among philosophers that physical science is at present in a peculiar state. Accumulation of experimental data has proceeded very rapidly during recent years, and it is now recognised that the whole class of data can be divided into two parts. Each part has a self-contained theory which gives an account of its phenomena, sufficiently satisfactory within reasonable limits, and capable of use as a prophet in the extension of knowledge. Yet at the same time the two theories themselves appear wholly irreconcilable, and each is quite inapplicable to any phenomenon of the other class. We may call one of them the "older physics," embracing the ether, the wave theory of light, and so forth. The other is the Quantum Theory. While the war proceeds between the exponents of these theories, each endeavouring to gain further territory from the other side, the philosopher can only take his stand at a suitable observation post and watch the course of events. Ultimately he must take the remnants of the two theories into his scheme.

The essentials of the new physical views have only begun to make their way into philosophical discussions, and even when they have appeared, they have often lost their natural shape. The present occasion is opportune for a consideration of some of their implications, though it is understood that they are not generally accepted among physicists as parts of a theory to which ultimate validity, in the physical sense, can be attached.

Quantum theory is concerned only with the microscopic phenomena. We only directly perceive the macroscopic, relating to material in bulk. The distinction between these

was brought forward prominently by Dr. Whitehead in the discussion of the symposium on the Scientific Categories at the Joint Session last year. Further discussion or precise delimitation of the boundary-line of these classes of phenomena is thus redundant.

Sir Oliver Lodge, in his contribution to the present symposium, seeks to illustrate the quantum theory of the microscopic by analogies drawn from the macroscopic. Such illustrations have one instructive feature in common. The quantum of force, or energy, or whatever it may be, depends on the material, and is not constant. The force required to tilt a brick on a table depends on the size and material of the brick, and again on the point of the brick to which it is applied. It has no property of *constancy* for all bricks in all circumstances. The only universal constant entering into this problem is that of gravitation, whose physical dimensions are those neither of force, acceleration, nor anything else for which we have a familiar name. The same occurs in the quantum theory. Though we speak of quanta of energy, such quanta are not simple multiples of a universal energy unit. They do not even imply such a unit as existent,—for a quantum of energy emitted from a system depends on the system, and is proportional to a frequency involved in the system,—or in other words, inversely proportional to a specified *time*. The actual quantum itself is one of *action*, which is a concept we shall refer to again. This is the universal constant of physics in this theory, and it merely happens to be involved in the energy, but in no more fundamental a manner than the universal constant of gravitation is involved in the force necessary to tilt the brick.

The whole of the quantum theory in fact is germane to our subject, and introduces a new element into the domain of the philosopher, only in so far as it involves the existence of a new universal constant of nature—not a minimum energy, but a minimum of *action*. The exponents of the theory

demand that it take its place with the other universal constants—the charge of an electron, the velocity of light in free space, and so forth—which are involved in the microscopic phenomena of physics. Other implications which have been drawn—we may instance the non-existence of any mental necessity for an all-pervading ether—are not so well founded, and in any case are clearer consequences of the body of phenomena within the purview of the Principle of Relativity. The only new feature with which, as philosophers, we should be concerned, is the new constant of action, and the problem of discontinuity which it again brings forward.

If the question at the head of our symposium were put to a group of physicists, many different replies could be expected. One might say that the ultimate data were sets of differential equations, which were interpreted in terms of our concepts of time, space, and material—in other words, the fundamental laws of nature in their quantitative aspect. Another would abolish material as being merely a region of space in which these laws were modified into others, with or without definite discontinuity. Another would say that the ultimate data were the unvarying constants of nature, not a sufficient basis for a scheme of nature, but the only true data we possess towards such a scheme of the ultimate. And so forth in devious ways. But such replies are not, we may suppose, concerned with the special problem under discussion. Apart from the fact that they lead to no common ground with the physiologist or psychologist, and even do not allow the existence of the subject-matter of such sciences, we can of course dismiss them all by stating that not relations ultimately perceived, but the essential framework of our modes of perception only should be chosen to include the data to which an ultimate character can be assigned. Any discussion of this framework requires a physiological contribution, and as Dr. Head is to deal with this subject, I shall,

like previous contributors, confine myself to some aspects of the physical side. My remarks are of necessity somewhat eclectic, for so much of the ground is already covered, from wholly different points of view, by the two previous contributors.

All the motive concepts of physical science—force or effort, momentum, energy, action, and the like—are, from time to time, put forward in the character of our primary perception. Force is the most usual, on account of our consciousness of muscular effort. The origin of the fact is thus rather physiological than physical. Other instances of physical concepts which arose early because of our special senses could at once be given. One is temperature, for we have a sense of hot and cold. Sir Oliver Lodge has sketched a scheme of development for physics, proceeding from the fundamental sense of effort. The effectiveness of this scheme for the macroscopic physics cannot well be disputed. But its extension to the microscopic gives us pause—and perhaps also the physiologist who is concerned with the microscopic phenomena of a cell. Has our sense of effort any relation to the atomic phenomena with which physics at present, in its progressive aspect, mainly deals? I incline to the view that it is in the same category as, for instance, temperature—which, had it been of importance throughout a greater range of science, would probably have been elevated long ago to the position of a fundamental datum. Now although the conception of temperature has been crystallised into the bodily motions—or their energy—of the atoms of substance, yet when our physics proceeds yet further into the microscopic, beyond the atom to the electron, temperature becomes meaningless. According to modern conceptions of the quantum type, so to a great extent does force, and the theory is largely devoted to the suppression of force as a fundamental, and its replacement by action in discrete units, in the physics of the subatomic. The ether, as the medium which, by its

strains, permits force to act from one portion of substance to another, is to share its fate.

This is, in the present development of the theory, a partisan view, but it is instructive to consider the force-concept further in the older and established physics which admits an ether.

Hamilton co-ordinated the laws of mechanics into a general Principle of Least Action, which is universal, containing the whole of mechanics within itself. Sir Joseph Larmor once described this as an algorithm so constructed as to enable us to abstract the molecular details of a mechanical system, of very complex molecular constitution, while retaining all that relates to matter in bulk,—or, in short, to macroscopic phenomena. This point of view does not appear to me to be open to criticism, as an epitome of the history of dynamical procedure, and yet this principle contains all that we can learn in relation to the course of the universe from our primary perception of effort or force. If we turn to the microscopic phenomena, we discern the possibility of an infinitely varied molecular structure in material,—all the more striking developments of modern physics are revelations of some of these possible structures and their modes of function,—each functioning in a different way, yet the differences exerting no influence on the mechanical behaviour of the material in bulk. If a change of structure occurs, it has no necessary external mechanical equivalent, and mechanics does not help us to trace it. In biological science, the structural changes and phenomena of growth cannot be followed by mechanics, and may not in fact be in accordance with it, though such phenomena as transmission of an impulse along a nerve, when that nerve already exists as matter in bulk, may well be expected to follow mechanical laws. Again quoting a remark of Sir Joseph Larmor, we may find the possibility of complete mechanical co-ordination of all the functions of an organism, already existing as matter in bulk, without the admission that principles at all similar regulate the more

remote phenomena of growth and decay of structure. According to the newer physics, the same is true for phenomena in the interior of the atom. It appears to be at least clear that even if our conception of force,—in spite of the fact that, from some points of view, forces are only mathematical coefficients which arise in the application of the action principle,—can be regarded as an ultimate datum for the physics of the macroscopic, it cannot for the whole of physics, and even less for the whole of science. It is apparently possible to extend this so far as to state that no ordinary mechanical concept can be specified as an answer to the request for any fundamental datum of science.

In the special case of energy, more might be said with advantage. It is perhaps not always realised that energy cannot be fundamental when once the molecular character of matter is postulated. Energy is a statistical conception, and not its actual amount, but only changes in that amount, due to portions becoming “available” in bulk, can in fact be specified in relation to any quantity of material. Energy as calculated is always arbitrary to the extent of an amount which, though quite unknown, can be treated as invariable for the problem under discussion. Energy cannot be a fundamental datum of science.

The question of *action* is of some interest in connexion with the opening remarks. There is evidently a sense in which it is more fundamental than the other mechanical concepts, though it cannot be called a datum. It is not suggested at once, by any fundamental process of the mind, from immediate bodily sensation or experience. In physical dimensions, it is the product of an energy and a time, or the product of a mass and the square of a length divided by a time. These are also the dimensions of angular momentum or moment of momentum, which in some manner appears, in an individual atom of matter, to be capable only of discrete values which are multiples of a universal constant. This may be the basis of all that is true in the quantum theory, but the fact may only be due to

some characteristic of inter-atomic structure which has not yet appeared as a deduction from experiment, or perhaps a characteristic of the ether itself. I am unable to conceive that the entire success of the quantum theory should contribute any reason for a preference of action over force as a fundamental datum of science generally—macroscopic and microscopic.

We have not discussed the interesting question as to whether the fundamental data of the macroscopic and microscopic are of necessity identical. It is itself a sufficiently large subject for a discussion, and it seems preferable to answer our present question by the mere selection of the fundamental data which the two share in common. We now dismiss, from this category, all the ordinary mechanical concepts, and are left with the so-called framework,—time, space, and material,—and the mathematical equations expressing the laws of nature in terms of this framework. We may include the ether in material, and the absolute constants of nature in the equations, for our present purpose. In the first place, as regards the ether, this concept cannot be fundamental in the newer physics which seeks to abolish it. In the older physics, as developed, for instance, in a precise manner by Sir Joseph Larmor, it is effectively synonymous with matter. An electron is a region in which a peculiar state of strain exists in the ether, and may have no precise boundary. The strain may decrease rapidly beyond a very small distance from its point of greatest intensity, but not with formal discontinuity, and no theory which introduces this concept can claim general acceptance. Every electron may thus occupy all space, yet be effectively confined to a small region, so that the so-called “free ether” cannot in fact exist as other than an approximation. Matter is a form of ethereal structure, and the postulation of an ether capable of strain following certain mathematical laws is necessary for this type of physics, and might well take the place of material, so far as the physicist is concerned, as a fundamental datum, but for the fact that it is an abstraction and not directly or

immediately an outcome of any of our means of perception, or a postulate which the mind finds it necessary, universally, to make, in order to obtain a reasoned order among our perceptions.

The share which the laws of thought possess in relation to this order among physical perceptions is not suitable for discussion in this contribution, but is prominent in so-called laws of nature, which are often to a great extent laws of thought. The similarities which occur, for instance, in the mathematical treatment of quite distinct branches of physics often cause astonishment, though due more to laws of the mind which compel us to proceed in this manner, than to any similarity in the phenomena discussed. The same consideration applies to the laws of nature themselves. Necessary mental processes participate in them as well as the nature of the external world about which we reason, and laws of nature in fact express no more than the laws of interaction of matter and mind by means of which external phenomena are co-ordinated. Their formulation is dependent on the process by which they are deduced. Temporal and spatial properties or laws of moving material, capable of simple co-ordination in the Principle of Relativity, for example, are equally capable of expression by the use of a different conception of time and space, and a mind which knew no geometry except that of Lobatchewski, and no mechanics except what it would have evolved under the influence of this geometry, would find no phenomena which called for any new interpretation in a region in which we ourselves find many. As an illustration, there is the law of composition of velocities, which makes the resultant velocity not the sum of two individuals, but a much more complex function of them,—the difference being appreciable only when they are comparable with the velocity of light. As Dr. Robb pointed out, if we measure motion by “rapidity,”—a natural thing to do in Lobatchewskian space,—instead of velocity, the mere additive law is restored. Finally, the newer development of the Principle of Relativity which takes account

of gravitation can be translated into a scheme on the older system in which we have a law of gravitation which is not quite that of the inverse square, with other similar alterations,—but only very much more cumbersome to express in the form of laws of nature, and with less of an artistic appeal to the mind. The elegance and simplicity with which a scheme can be presented count for much in the determination of the main lines on which the laws of mental process prefer to build up the analogies which we call laws of nature. We cannot, in these circumstances, attach any fundamental character, in the sense now under discussion, to any individual law which expresses relations among external perceptions.

No apology is perhaps necessary for the re-statement of some of the more elementary considerations, especially in the last paragraph, for they are often overlooked in discussions. There is one aspect of the laws of nature which is especially interesting. Laws do not always express relations between different phenomena,—for instance, the law that electromagnetic waves always travel with the velocity 3×10^{10} cm. per second. Such exceptions, or partial exceptions, express the fact that universal constants exist in nature. Such constants are always compounded of length, mass, and time, requiring time, space, and inertia as their fundamental data. The three may occur, or two, or one, and in the last case, some light is thrown, by the existence of the constant, upon the nature of our conception of the fundamental involved.

We can in fact find a natural unit of time from at least one branch of physics. The frequencies of all spectra given by atoms, of whatever nature, appear to contain a universally constant factor, which is a very small duration of time,—related without doubt to the duration of a single rotation of the electrons constituting the atom, and thus satisfying Professor Whitehead's view that all time-minima relate to "objects." Spectra are only developed when several electrons together, collocated into an atom, are concerned. While I must express entire agreement

with Professor Whitehead's effort,—and the lines on which it proceeds,—to form a constructive scheme of the nature of the fundamental time-conception of physics in place of that normally found in current treatises,—one question may perhaps be raised. If a duration of time with definite extension is found to be universal in all collocations of electrons into atoms, it would seem necessary to refer it back into a property of the individual electron, and thence further, in the older physics, into a property of an ether, which from the physical standpoint involves a structure, which we may again call atomic, in the ether itself. The hierarchy of stages must then begin with “uniform objects” which are beyond the electron itself. But this does not touch the principle that the ultimate objects must be uniform. It does carry us nearer to a contention of Sir Oliver Lodge, on the more physical ground less immediately relevant to this discussion, that all the universal constants of nature will ultimately be located in the ether of space.

This contribution has endeavoured to indicate how from physical science alone, without the aid of the philosopher, an advocate could proceed to obtain an affirmative answer to the first part of the question at the head of our symposium, by the process of exclusion of everything else in his science which has been or might be suggested in place of the three fundamentals. Of the sense in which these can be regarded as fundamentals, nothing has been said. Professor Whitehead has already discussed space and time from this point of view, and even derived an interesting theological conclusion from the newer conception of time. Material would appear to include all concepts, directly suggested by our sensory organs, in which quantitative effects can be perceived and expressed in terms of space and time—effort, colour, hardness, are instances. Its exact definition into the smallest compass is not clear, nor what other concepts it must include, and a consideration of the physical sciences alone cannot elucidate the question. It is at least totally different from matter or inertia.

IV. *By* HENRY HEAD.THE PHYSIOLOGICAL BASIS OF THE SPATIAL AND TEMPORAL
ASPECTS OF SENSATION.

HUMAN conceptions of space, time, and material rest ultimately on the nature of the spatial and temporal elements in sensation. These in turn are founded on complex physiological activities, many of which may never disturb consciousness directly. In such a discussion as this, it is well to step aside for a few moments to consider the nature and character of these processes; for, although they do not enter into the province of introspective psychology, they are responsible for much that is usually attributed to the action of the mind.

It must not be forgotten that sensation, as known to the normal individual, is the result of innumerable changes, which have been integrated on the physiological level. The diverse effects produced on the living organism by a stimulus are sorted, combined or inhibited on their passage through the central nervous system, and the ultimate results of the integration finally act on the appropriate receptive centres. The most elementary sensation is based on innumerable physiological changes.

Moreover, we are accustomed to think of the stimuli we employ as if they were simple physical conditions; thus we speak of the effects produced by "a temperature of 45° C." In reality, the stimulus is an external body, which evokes a multitude of physiological reactions, many of which are incompatible with one another from the point of view of sensation. Thus 45° C. stimulates the heat-spots, cold-spots, and pain-spots, and yet produces normally a sensation of pleasant warmth,

Physiologically speaking, a simple stimulus is an abstraction, and an external object is a group of functional events.

This complexity of the intervening physiological processes become comprehensible, if we recognise that sensation, as known introspectively, is the product of evolutionary changes. Much light can still be thrown on the stages of this development by studying the products of dissociated sensibility in man. This method reveals the nature of physiological activities normally controlled or inhibited, which, in consequence of some pathological change are permitted to arouse sensation and so to exhibit in full their sensory potentialities.

The actual afferent consequences produced by an external stimulus cannot be discovered by introspection. All we know is that the object is of a certain size, shape, temperature, and consistence; under normal circumstances we must for ever remain ignorant of the nature of the impulses, which underlie these sensory characters. But by selecting suitable cases of lesions at various known points in the nervous system, we find that some impulses are intercepted whilst others are transmitted to reach the highest receptive centres and form the basis of an abnormal sensation. By analysis of these sensory changes it is possible to unravel that vast mass of physiological activities which lie normally outside the field of consciousness.

At each anatomical situation, dissociated sensibility assumes forms appropriate to the functional combinations of afferent impulses at that point. For example, in the spinal cord the sensory impulses underlying pain, heat and cold run in separate paths; thus a suitable lesion can produce insensibility to any one of these three aspects of sensation, without of necessity affecting the other.

But the dissociation method is capable of revealing much more than this. Physiological integration is carried out to a great extent by the dominance of highly developed reactions over those which show a more primitive character; a lower organisation is kept permanently under control by the activity

of some higher afferent system. A suitable lesion may abolish this control and set free the older mechanism to act upon consciousness unchecked. This phenomenon of "release" applies equally to the relation of two centres or of two functions, provided that one normally exerts a dominant influence over the other.

But removal of the activity of the dominant mechanism does not reveal the functions of the phylogenetically older organ in all their primitive simplicity. A lesion, which sets free the human optic thalamus from cortical control, produces a highly specialised series of phenomena, which have never existed in this form in phylogenetic history; for sensation is the product of the activity of two great receptive centres, the cerebral cortex and the optic thalamus. As we ascend the biological scale, each of these two physiological organs takes over more exclusively the initiation of certain aspects of sensation. The setting free of a primitive activity from higher control reveals, therefore, a condition, which is a part of the complete sensory act; it does not reproduce exactly the functions of an ancient mechanism in their original form. But the reaction is sufficiently stamped with primitive characteristics to enable us to obtain some idea of the evolutionary stages through which the physiological processes underlying sensation have passed on the way to their present perfection.

Nowhere are the complexities of the physiological dispositions underlying the simplest sensation more evident, than in their spatial and temporal aspects. The power of recognising the position of the stimulated spot is, from the point of view of introspection, inevitably bound up with the quality of the sensation. Tactile, thermal and painful impressions, produced by the contact of a stimulating object, are normally accompanied by recognition of its size, shape, weight and position in space. Pathologically, however, it may be possible to appreciate the qualitative aspects of a stimulus without being able to determine any of these projectional characters. The patient

may not even recognise that his sensory experiences are due to the application of an external stimulus. When pricked, he suffers pain ; but he has no idea that it is due to the action of something outside himself.

Complete dissociation in the opposite direction is obviously impossible. For removal of all these afferent impressions, by which we become aware of the existence of stimulation, destroys the material, by the modification of which projection is made possible. The physiological basis of the qualitative and projected aspects of sensation are independent of one another, and so long as the body retains any power of responding, however little, to contact projection may be perfect. The patient still knows where he is touched, he can discriminate two points and recognise the position of the limb in space ; objects brought into contact with his skin seem to have size, shape and weight, although he may be entirely insensitive to the pain, heat, and cold they would normally evoke.

Although localisation of the stimulated spot is the simplest spatial aspect of sensation, observation has shown that it is the product of a struggle between various impulses with diverse sensory potentialities. During the protopathic stage of recovery of sensation, after division of the nerves to a considerable area of the skin, any stimulus capable of arousing a sensation is localised at a distance from its point of application. If care is taken to avoid pressure and the hairs are gently stroked, a wide spread tingling may be evoked which seems to lie over some remote area. In the same way a drop of ether causes an extensive sensation of cold, and an interrupted current one of pain in the same parts of the limb. This erroneous localisation is not fortuitous ; it remains the same, whenever the stimulus is effective, provided it does not evoke sensations of pressure.*

* This condition, with its extensive response and diffused localisation, is not simply a scientific curiosity. It is the normal method of sensation in the glans penis, an organ supplied by protopathic and deep sensibility only. Moreover, it still exists, though in a repressed form,

But, with the return of the higher forms of sensibility to the skin, this diffuse radiation ceases, and is replaced by that form of cutaneous localization with which we are normally familiar. The older extensive response gives place to one more consonant with discrimination.

This is not surprising, when we consider that the sensory mechanism of man has been evolved from that of lower organisms. The primitive method of response produces movements of withdrawal which permit of no choice and are admirably fitted to defend the animal from noxious influences.

But, with the higher development of function in the nervous system, these impulsive reactions are replaced by sensory activities, which permit of discrimination and choice. The response ceases to be diffuse, and becomes confined to the neighbourhood of the stimulated spot; it no longer has the "all or nothing" character of the primitive sensation, but comes to bear some relation to the intensity of the stimulus. Two or more spots can be discriminated, and recognition of the relative size and shape of the external object follows as a necessary corollary. The character of the sensory projection has changed. Impulses from the surface of the body are no longer concerned with producing an indiscriminate reaction of repulsion or attraction, but reveal the position and relative characteristics of objects in contact with the skin.

Recognition of posture and movement, that is, the three-dimensional aspect of projected sensation, is bound up with the integrity of the afferent mechanism of joints, tendons, and muscles (deep sensibility). The spatial impulses generated in this deep system are carried upwards in the posterior columns

elsewhere in the body, to appear as the referred pain and tenderness which accompany affections of the internal organs. For, not uncommonly, some abnormal condition of the viscera causes a band of pain and tenderness extending round the body, altogether remote from the position of the stimulus; this corresponds, however, to the segments of the nervous system, from which the affected organ receives its afferent nerve supply.

of the spinal cord and, if this part of the central nervous system is destroyed, the patient can no longer appreciate the position of the affected parts in space, nor recognise passive movements of the joints.

Now it so happens that those impulses from the surface of the body which underlie the spatial aspects of cutaneous sensibility (except those responsible for localization of the stimulated spot), also pass up in the posterior columns of the spinal cord. A local lesion in this situation can therefore destroy all power of appreciating the position of the affected limb in space, and the patient may be unable to recognise the size, shape, weight, or texture of any object in contact with his body; nor can he tell whether he has been touched by two or more points simultaneously. That is to say, every projected element in sensation has been wiped out, except localization.

Dissociation between the spatial and qualitative aspects of sensation can be produced even more perfectly by certain lesions of the cerebral cortex. The patient loses the power of recognising movements or the posture of the affected parts; he can no longer localise the position of the stimulus, or respond adequately to variations in its intensity; he has no idea of the size, shape, weight or texture of an object in contact with his body, and yet he can appreciate the tactile, painful and thermal aspects of the impressions it evokes.

Thus it is possible to recognise the qualitative aspects of a sensation, without of necessity obtaining any information concerning the stimulating object, as a constituent of the external world. Sensory qualities, and the affective states with which they are associated, are in themselves discontinuous. They are relative to ourselves, and appear and disappear in consciousness, without leaving any connective factor in the activities of the mind.

On the other hand, the projected aspects of sensation relate these qualities, not to ourselves but to the external world. In fact, an "object" might be defined as a complex of projected

sensory responses. We assign to it characters such as size, shape, weight, texture and position in space; all of these depend directly on physiological processes which take place in the sensory cortex. They can be disturbed without interfering with those afferent activities, which underlie the tactile, painful and thermal qualities of sensation.

These functions of the cortex are not only responsible for sensory projection in space, but also ensure recognition of sequence in time. One of the commonest defects, produced by certain cortical injuries, is want of temporal definition; the sensory impression has no necessary beginning or termination. A stimulus, rhythmically repeated, may be thought to be continuous; it seems "to be there all the time," and the patient cannot appreciate with certainty the moment when it is applied or removed. He has, as far as such stimuli are concerned, no complete recognition of an extended sequence of events.

Now it is a remarkable fact that, from the periphery to the highest sensory centres, loss of power to appreciate serial movements in space is associated with inability to respond to the vibrations of a tuning fork. These two sensory faculties are intimately associated and, from the point of view of somatic sensation, the power of recognising serial movements both in space and in time, seems to be based on the same physiological processes. They give us a direct appreciation of succession; this is translated into sensations of serial movement either in space or in time, according to the nature of the concomitant sensory impulses.

These physiological responses, which are so clearly bound up with the activities of the sensory cortex, are characterised by a strict dependence on past events. All projected sensations leave behind them a coherent train of physiological dispositions; thus a movement occurring at one moment is measured against the consequences of those which have preceded it. This is not a psychological act, but occurs on the physiological level; every

recognisable change in posture enters consciousness already charged with its relation to something which has gone before, and the final product is directly perceived as a measured postural change. This is the case with all the higher projectional aspects of sensation; they form a continuous series of physiological dispositions determined by previous events of a like order.

There is no moment at which some past sensation is not still acting through the physiological dispositions it has produced; in the same way, the future is implicit in the present. Sensations of movement in time or in space cannot be considered as a series of instants, because without the activity at any moment of physiological process founded on past sensations, it would be impossible to recognise that movement was taking place.

The unit of sensation is not a moment of time made up of certain qualities, but a "happening" or "event." Recognition of sequence, or the passage of nature, is fundamental, if sensation is not to become a multitude of unrelated and undifferentiated responses. Qualities such as pain, heat and cold are abstracted from this "happening," and spoken of as "sensations." In reality, they can only form part of a consecutive consciousness by virtue of the coherence they receive from the projected aspects of sensation. Should these fail, the material stimulus loses size, shape, weight, texture, spacial relations and intensity; it ceases to be part of the world around, and becomes an individual experience. It is to the projected elements in sensation that we owe our conceptions of coherence both in space and in time, and these depend in man on the normal activity of the cerebral cortex. For, with the gradual evolution of the nervous system, the optic thalamus becomes a highly specialised centre for the qualitative and affective aspects of sensation, whilst the activities of the cortex are responsible for sensory projection, as known to the normal human being.

The spatial and temporal elements in sensation do not depend primarily on "judgment" or "association"; for afferent impulses can be shown to possess projectional characters on the physiological level. Study of the higher reflexes shows that they are governed by remarkably complex relations in space and time. So purposeful and varied may be the response, that it is difficult to believe the movement is not controlled by the will. Thus the same class of impressions, which underlie discriminative sensibility, can be discovered at work regulating and controlling purely automatic actions.

From a study of the reflexes and the facts of dissociation, it would seem that sensation, in its primitive form, must have been a vague undifferentiated state, aroused by afferent impulses whose primary purpose was the production of impulsive reactions. Any spatial elements, inherent in such impulses, were intended to guide and control these automatic movements. This crude method of response was refined, not only by improvement in the functions of the original sense-organs, but also by the development of further sensory mechanisms capable of more discriminative activity.

These sense-organs, belonging to various stages of development, are still active, even in man. Their co-existence leads to the production of incoherent and incompatible impulses, which must be integrated before they can form the basis of a sensation. This is the task of the central nervous system. Some of the more primitive modes of reaction are repressed, others are utilised to a greater or less extent in the production of more highly developed responses. This co-ordination is carried out through the steadily increasing control exercised by higher and more recently developed centres over those on a lower evolutionary level.

Primitive sensation was probably a condition of "awareness," endowed with but slight qualitative or discriminative characters. Out of this undifferentiated state have been evolved the highly developed sensory functions of man. This gradual growth of

the sensory faculties was associated with increased specialisation of the physiological processes upon which they ultimately depended. Finally, each of the two great receptive centres became almost exclusively occupied with the underlying basis of either the qualitative or projectional aspect of sensation.

But, although the physiological elements of spatial discrimination can be affected apart from those concerned with the qualities of sensation, they demand the existence of some kind of afferent basis, in order that they may be able to exercise their functions. In the same way, the power to respond adequately to stimuli of different intensities can be destroyed, without affecting qualitative sensibility; but abolition of all awareness to stimulation leaves nothing on which the power of responding to relative intensity can act. Some physiological activity must always occur in the lower centre, before the higher one can exhibit its discriminative and projectional functions.

With the high development of his cerebral cortex, man acquires a cumulative knowledge of the world around. He examines himself and, out of what he finds by introspection and physical measurement, constructs his conceptions of time, space, and material. But, ultimately, the fabric of his philosophy depends on the nature of physiological reactions produced by the impact of physical stimuli on his sense-organs. These have been formed out of the lowliest materials and the human nervous system is engaged in a perpetual struggle to integrate and control these incoherent responses, so that they may endow consciousness with discriminative sensations of quality, space, and time.

V. *By* MRS. ADRIAN STEPHEN (KARIN COSTELLOE).

THE point of view from which I propose to answer our question in this paper is that which would, I believe, be adopted by Bergson. If our question were put to him, Bergson would, I think, reply : Material is the ultimate datum of science, space is the form which science imposes upon its objects, science cannot deal with time.

Since we are discussing what are the data of science we shall be concerned, in what follows, mainly with applied science. Applied science has to explain the phenomena of our experience, and explanation consists in formulating laws which enable us to pass from known to unknown phenomena, *i.e.*, given a phenomenon we explain it when we can infer its causes and its effects, neither of which *are* actually known when the phenomenon is known. The ultimate datum of science, therefore, will be that in phenomena which corresponds with the terms of these laws so as make their application possible. Scientific laws, and indeed all explanations and descriptions, are in terms of abstract ideas and words. In order to find out what are the ultimate data of science, then, we must see what sort of correspondence there is between abstract ideas and words and phenomena.

We commonly suppose that abstract ideas stand for common qualities of things which we actually perceive. Thus the abstract idea of whiteness, for example, is supposed to stand for the quality belonging to all white phenomena. Bergson denies this. He asserts that phenomena have no qualities : qualities are fictions created on the analogy of abstract ideas in which we believe only because we are so much more accustomed to attending to abstract ideas than to actual phenomena. According to Bergson abstract ideas have a form quite different from

that of actual phenomena: abstract ideas he says are "spatial" while actual phenomena are not. This use of the word "space" is peculiar. Even as it is ordinarily used the word "space" is ambiguous: it may mean either sensible space or else pure space. When Bergson speaks of "space" however he does not mean either sensible or pure space, he means an *a priori* form imposed by mental activity upon its object. This resembles Kant's use of the word, but Bergson's "space" is not, like Kant's, the *a priori* form of sense acquaintance, but of thought, that is it is logical form. For Bergson "spatial" means logical. Now, whatever is "spatial" is characterised by consisting of distinct, mutually exclusive terms united by external relations. These characteristics certainly belong to the abstract ideas and words employed in thought and we commonly suppose that they belong to everything else besides. Bergson, however, believes that this "spatial" form, which belongs to abstract ideas and words, is not discovered in phenomena but imposed upon them by our intellectual habits of mind; this is what was meant by saying that science imposes the form of space upon its object. Bergson points out, for example, that the phenomena with which we are actually acquainted are in constant process of changing, and that when we examine carefully what is actually going on, we discover that this change does not really form a series of distinct, mutually exclusive percepts or qualities or states, united by external relations of time, resemblance, difference, and so on, but a continuous process which has what we might call qualitative flavour, and in which distinct qualities, states, and so on, do not occur. "Considered in themselves," Bergson says, "profound states of consciousness have no relation to quantity: they are mingled in such a way that it is impossible to say whether they are one or many, or indeed to examine them from that point of view without distorting them." Now, strictly speaking, of course, these "states of consciousness ought not to be referred to in the plural: it is in fact a contradiction to speak of "states of

consciousness " having " no relation to quantity ": a plurality must always form some quantity. This contradiction is the natural consequence of attempting to put what is non-logical into words. It would have been just as bad to have referred to " the state of consciousness " in the singular, while at the same time insisting that it contained resemblance and difference. The fact is that plurality and unity, like distinct terms and external relations, are " spatial " notions, and Bergson's whole point is to deny that they apply to phenomena. This, of course, raises difficulties when we try to describe phenomena in words since words are derived from abstract ideas and have their " spatial " form. All descriptions in word of what is " non-spatial " are bound to be a mass of contradictions, for, having applied any word, it is necessary immediately to guard against its " spatial " implications by adding another which contradicts them. Thus we say that our experience is of phenomena, and must then hastily add that nevertheless they are not plural, and we must further qualify this statement by adding that neither are they singular. A description of what is " non-spatial " can only convey the meaning intended if we discount all the " spatial " implications of the words which, for want of a better medium of expression, we are driven to employ.

Now when it is said that the form of " space " is imposed upon phenomena by our intellectual habits, it is not meant that phenomena ever really become " spatial," *e.g.*, that the process of change ever really becomes a series of distinct qualities in external relations of time, similarity, and so on. What is meant is that, being accustomed to think in terms of abstract ideas and words, which really are " spatial," we assume that everything else, including phenomena, must have the spatial form, and so fall into an error of judgment as to what experience we do actually have when we are acquainted with phenomena. We have just seen how much language encourages us in this error. The assumption that what is true of the words and abstract ideas which we use in explanations

and descriptions must be equally true of the phenomena we are explaining and describing comes the more naturally because the descriptions and laws which we frame in terms of words and abstract ideas really do enable us to pass from known to unknown phenomena. Thus we are able to regulate our behaviour successfully, to secure those phenomena we want and avoid those we do not want. It may seem strange to accuse the ordinary run of mankind of over-intellectuality; devotion to pure thought is rare enough. By intellectual operations, however, we do not mean only pure scientific investigations; all thinking and using of abstract ideas or words is intellectual in that it involves substituting fictitious intellectual creations for the actual phenomena of experience. This method of substitution is the intellectual habit which is apt to lead us into error: at the same time it is the only method open to science. It is not possible, strictly speaking, to think in terms of actual phenomena; clear thought can only work with abstractions, and in order to get a clear view of any phenomenon we are obliged to substitute for it either abstract ideas or words, and then comes the danger of assuming that whatever is true of the substitute must also be true of the phenomenon itself. All descriptions of the phenomena of experience are substitutions of this kind. The common-sense world of things, events, qualities, minds, feelings, etc., with which we are familiar, is an early and somewhat crude attempt, but it is perhaps more misleading than the later elaborate constructions of chemistry, physics, biology, and psychology, in that qualities, minds, and so on, are more easily mistaken for phenomena than more obviously scientific notions. In all these descriptions, however, the method is that which science must always employ, viz., the substitution for the actual phenomena of "spatial" constructions made out of words or abstract ideas put together so as to form laws or descriptions. These "spatial" constructions are of the utmost practical value in enabling us to discover in advance what phenomena to expect so that we can

adjust our behaviour accordingly. It is this practical need of knowing in advance what to expect that gives our attention its strong intellectual bias towards abstract ideas, without which we should not be able to frame the general laws which alone make predictions possible.

We have said that this bias is dangerous because it tempts us to take for granted that what is true of our intellectual substitutes must also be true of the phenomena for which they stand, and so hinders us from appreciating phenomena as they really are. Our intellectual habits, which are indispensable for explaining phenomena, are thus a great handicap when it comes to speculation, when, that is, we want to know what the phenomena with which we are acquainted actually are. We have seen that one important misconception into which we are inclined to fall is that of supposing that phenomena have the "spatial" form which belongs to the abstract ideas and words by means of which we describe and explain them. The phenomena themselves, we said, are found on inspection to be a process and not a series of distinct things, qualities, etc., joined by external relations.

But if phenomena are not things having qualities, how comes it that descriptions and laws couched in "spatial" terms apply to them? We naturally suppose that the correspondence between phenomena and descriptions and laws can be explained by a one-one correlation between qualities and abstract ideas. But if there are no qualities, how does science apply to phenomena?

In order to see how "spatial" abstractions can apply to "non-spatial" phenomena, we must examine the intellectual operation by which abstractions are obtained. Abstractions arise out of the act of recognition by which phenomena become familiar. Without recognition and familiarity, *i.e.*, if every fresh phenomenon appeared absolutely new and strange, it would be impossible for the work of abstraction ever to begin. Now it is usual to suppose that recognition consists in

perceiving similarity between a present phenomenon and other phenomena previously experienced, and this similarity is usually supposed to consist in the fact that these phenomena have similar qualities. Bergson denies that in recognition we perceive similar qualities. Recognition, he says, is not the perception either of similar qualities or of relations of similarity between past and present phenomena; recognition combines what is immediately given in the present with memories of past phenomena, and creates out of their combination a new phenomenon. Since recognition contains present perception in addition to memory, this new phenomenon is not a mere repetition but something fresh, different from anything that has ever happened before. Recognition is the creation of novelty, not the perception of repetition.

This theory of recognition appears paradoxical and is not easy to grasp. It will be better understood if we first examine Bergson's theory of sensible perception, to which it is closely related, and then return to it. The unsophisticated view of sensible perception is that it acquaints us with something which exists whether we perceive it or not, and this something is commonly called the material world. Bergson adopts this position (provisionally at any rate) as being the nearest approach to a true description that can be expressed in words. When his theory is fully explained, it is seen that even this material is, after all, only a fiction. It is required if the sensible perception of phenomena is to be explained, but it does not exist in the sense in which real phenomena exist. According to the unsophisticated view, this material, with which sensible perception acquaints us, is the common-sense world of things, qualities, and so on, but we have already seen that this common-sense world is really itself only one of the various attempts which science is ever making to explain phenomena. The worlds of electrons, vibrations of ether, forces and so on, constructed by physics are other attempts

to do the same thing. Material is not any one of these scientific constructions, it is that actual reality which they were all intended to explain. Some philosophers, noticing how different the phenomena which we actually perceive are from the world of things and qualities or any of the other worlds constructed by science, have put forward the view that these phenomena are not the material itself but only signs of it. This view Bergson rejects. He believes that in sensible perception the phenomena actually *are* the material. An instantaneous phenomenon would, according to this view, *be* simply material itself. For Bergson, however, an instantaneous phenomenon is not possible. Every phenomenon contains more than the material presented at the moment of perception; phenomena are distinguished from such material by lasting through a period of duration. A phenomenon may be defined as the contraction of a period of the duration of material, in which the earlier material is preserved along with the later and forms a single whole with it. It is memory that makes the difference between phenomena and material. A single perceived phenomenon, however, does not contain memories, as distinct from the present material: the distinction between present and past does not hold inside phenomena, nor is it really correct to describe them as "containing earlier and later material." We have to use these "spatial" notions in order to give any description at all, but they are very inaccurate. An illustration may perhaps convey what is meant by saying that a phenomenon is a contraction of a period of the duration of material. Consider red, bearing in mind that, whether we mean the phenomenon or the material, we must discount the "spatial" implications which are contained in the abstract ideas and words employed in our descriptions. Science says that red, the material, is composed of immensely rapid vibrations of ether: red, the phenomenon, we know as a simple colour. According to Bergson, this simple colour *is* a period of these vibrations contracted so as

to produce the perceived phenomenon. As material red is a series of distinct terms, it is "spatial:" as phenomenon it is a "non-spatial" qualitative process. Material and phenomena are the same thing, arranged in different ways, which correspond to different explanations. The same thing which, in its material arrangement, is explained by physics in terms of vibrations and forces and wave-lengths, *is*, in another arrangement, the phenomena which cannot be explained in those terms. The difference between the two is made by the mental act which holds material in tension through a period of duration when a phenomenon is produced, but which is absent when there is no phenomenon, but only material. Bergson calls this act memory. According to Bergson it is only when such an act of memory occurs that duration goes on at all: without memory there would be no duration, no time. Material has no duration, no memory, and it is just in this that it differs from phenomena. Now, according to Bergson, science cannot deal with memory, *i.e.*, with the act which contracts material into phenomena, and this is what he means by saying that science cannot deal with time.

Returning to the question of recognition, we can now see how "spatial" laws and descriptions can apply to what is "non-spatial." We shall be able at the same time to see in what sense they apply to material, and why they break down when the attempt is made to apply them to memory. On Bergson's theory of sensible perception, as we have seen, even the most unfamiliar phenomenon must contain some memory, otherwise it would not be a phenomenon at all, but would be simply material. Our ordinary phenomena, however, contain much more than this bare minimum. The phenomena of every-day life are at once recognised from a vast number of points of view. When I look at a cherry I recognise its colour, shape, etc., I know that it is edible, what it would taste like, whether it is ripe, and much more besides, all at a glance. All this knowledge is supplied by memory. Memory gives meaning

to what we might call the bare sensation, as opposed to the full, familiar phenomenon of my actual experience. Now, this meaning is conveyed in the phenomenon along with the bare sensation, not as a multiplicity of memories, distinct from the sensation, but, as we said, at a glance. Every phenomenon has what we might call a particular flavour on account of the meaning supplied by memory. The bare sensation, which is identical with material, may be a repetition of previous bare sensations, but the full phenomenon will always be something fresh, its flavour changing as it grows more and more familiar. To analyse this flavour into bare sensation plus memories of, *e.g.*, colour, shape, etc., makes a very inept description of any familiar phenomenon. The "spatial" notion of addition, and, indeed, the distinct multiplicity inherent in "spatial" form, convey an altogether wrong picture, because these "spatial" notions can only stand for repetitions. Now, it is true that memory creates phenomena out of material, which can repeat, and so can be described in "spatial" terms. For many purposes, it is enough to enumerate the material out of which a phenomenon was created. In this way causes can be assigned to phenomena, and it would even be possible, at least theoretically (given a memory to perform the act which turns material into phenomena), to reproduce a given phenomenon by submitting to this memory the appropriate material. To this extent science can be applied to phenomena. But, when it is turned by memory into phenomena, material is transformed, and does not any longer consist of repetitions. "Spatial" notions cannot represent it in this new form, because in the phenomena past and present material, *i.e.*, meaning and bare sensation, are combined by memory to form a whole with a unique qualitative flavour. This qualitative flavour is not a quality, if that word be used with its "spatial" implications of distinctness and externality of relations, because all phenomena occur in the course of the duration of mental life, which is not a series of distinct terms, but a "non-spatial" process. Mental

life is one big phenomenon. If we imagine a phenomenon, such as we have described, lasting on and on, taking up new bare sensations and complicating what it already contains with these and their meanings, we can get some idea of what mental life is. According to Bergson, the memory, time, duration, which turns material into phenomena is the essential principle of all life, and distinguishes mind from matter. This is what he means when he says that science cannot deal with life; simply that when we try to apply scientific descriptions to the work of memory they are out of place: they do not apply, because phenomena do not contain repetitions. It is therefore out of the question to think of memory-wholes in "spatial" terms: either we must give up the actual phenomena or else the description. This is what was meant earlier when we said that our intellectual habits were nothing but a handicap if we want to discover what experience we do actually have.

We have seen that the phenomena which go to make up a mental process cannot be repetitions, because every fresh phenomenon must have a fresh qualitative flavour. The case of material is different. Material is not contracted by memory, so there is nothing in material to make repetition impossible, as there is in the case of the creations of memory. But now the qualitative flavour of phenomena is created by memory out of the meanings evoked by bare sensation, and these, if it were not for the memory which transforms them, would be material. Bare sensation, apart from its meaning, *is* material, and so is its meaning, taken apart, for this meaning itself was formerly bare sensation, which only became a meaning through an act of memory. A bare sensation now may resemble a bare sensation last year, though a phenomenon now must always have a new flavour, because the bare sensation of last year (together with its meaning if even last year it was already familiar), will have been combined by memory with this year's bare sensation, so as to become its meaning and transform it from a bare sensation into a familiar phenomenon. Bare

sensations can be repeated but phenomena cannot. Now it is the repetition of bare sensations which explains recognition, and also explains how science can apply to phenomena. Recognition can be explained as follows: whenever a bare sensation now resembles a previous bare sensation, the two tend to coalesce, and thus create a fresh phenomenon with a qualitative flavour different from that of the bare sensations out of which it was created. Science applies to the bare sensations out of which phenomena are created but not to the actual phenomena. Since bare sensation is identical with material, science may be said to explain material, or, if the phrase be preferred, to explain the material element in phenomena. Since it is memory that makes the difference between material, which science can explain, and phenomena, which it cannot, science may be said to be unable to deal with memory, or, if the phrase be preferred, to be unable to deal with the creative element in phenomena. It must by now have become apparent that bare sensation and absolutely fresh qualitative flavour are both of them fictions invented in order to explain phenomena. That their explanation is clumsy and contradictory needs no apology if Bergson's theory of the relation between phenomena and explanation is correct. In actual experience we do not find a division into these two extremes but a qualitative process. Bergson explains what really happens by saying that in this process which we actually experience and which science tries to explain there are two tendencies, one towards repetition and one towards creation. Neither of these ever in fact occurs alone, but, for the sake of description, we have to use the scientific fiction of imagining what each would be independently of the other and then explaining what really happens in terms of a combination of these two fictions. Now the tendency to repetition, if it were unchecked by the activity of memory, would be bare sensation, that is, material. The tendency towards creation would produce pure mind, simple, unanalysable, unique. Science would be

absolutely at home with bare sensation, it could do nothing with pure mind. The actual fact of experience is neither of these, but sometimes it tends in one direction and sometimes in the other. According as they tend towards repetition or towards creation, phenomena will be more or less explicable in scientific terms.

I will conclude by emphasising the two important points which emerge from what has been said. First, that since phenomena, in whichever direction they tend, remain "non-spatial," explanations will be misleading, speculatively, unless we remember to discount their "spatial" implications. Second, that on the other hand, since all phenomena are created out of what, taken apart, can be repeated, any phenomenon, however creative, can be explained causally in "spatial" terms corresponding to the repetitions out of which it was created.

VI. *By* H. WILDON CARR.

A DISCUSSION between speculative philosophers and practical scientific laboratory workers as to their fundamental principles suggests to most people the kind of discussion which is illustrated in Boswell's delightful story of Dr. Johnson's refutation of Berkeley. We expect the scientist to be impatient and scornful of the philosopher's want of contact with practical reality and the philosopher with his attention fixed on the ideal to be inefficient and unconvincing, however unanswerable. Professor Whitehead, in opening this symposium, has saved us from any such ineptitude by placing our problem at once and decisively on ground common to philosophy and physical science. We are not invited to discuss whether the *esse* of space, time and material, is *percipi*, or whether being perceptions of the mind they can exist anywhere but in the mind which perceives them. This problem is not raised in our question in any form. The problem which Professor Whitehead propounds for us is a very concrete one. Physical science begins in an awareness of nature. What is the primitive form of this awareness? Do we in simple awareness of nature discriminate space, time, and material, so that these are in that sense the ultimate data of science? Or, are these an interpretation and later elaboration of a simpler or at least more ultimate apprehension of reality? Awareness of nature, Professor Whitehead contends, begins in the awareness of a whole, present, and directly sensed, and not in a detailed discrimination of its parts. He goes on to argue, particularly in regard to time, that it is simply impossible that awareness of time can begin in the discernment or discrimination of an instant. Time therefore in the meaning of the mathematical concept is certainly not ultimate, it must be preceded in experience by the apprehension of the event.

Sir Oliver Lodge, on the other hand, holds that time, space, and matter are ultimate in the only sense in which scientific data can be ultimate. They are abstractions from actual experience, but they are based on primary sensations and they are (and this is the important point), though inferences, yet necessary inferences from force and motion which are the actual experience.

Professor Nicholson has suggested and insinuated a subtle doubt which should appeal to the dialectical philosopher, but which he himself declines to explore, or rather he decides to give expression to it and pass it by. It is really, however, as he perceives, more fundamental than the question as to fundamental data which we are discussing. Is it a possibility, he asks, that there may be an absolute dualism in physical science itself, so that the microscopical not only demands a new principle of interpretation but exhibits independence of the macroscopical in the system of its reality? May it be, for example, that the law of the inverse square is true of macroscopical systems and untrue of microscopical systems, because the reality of the one is not continuous with the reality of the other? It seems to me that such a distinction pressed to mean that there may be an ultimate dualism within physical science itself would simply be subversive of the principle on which physical science depends. No doubt this is not intended. It does suggest to me, however, an important aspect of the distinction between the macroscopical and the microscopical which needs to be emphasised. The fact which is statistical in the macroscopical phenomenon, and particular and individual in the microscopical, is not particular and individual in the absolute sense but only relatively to the macroscopical. When we place ourselves at the microscopical standpoint, what was a microscopical phenomenon at once becomes macroscopical, and there comes conceptually to view a new microscopical particular, and so on to infinity.

For the present discussion the most important thing brought

forward in the symposium from the physical standpoint seems to me Professor Nicholson's reference to "Rydberg's constant," with the suggestion that spectral analysis may be about to establish for us an absolute time unit.

Dr. Head has introduced a new, very important, and essential consideration into our symposium. Between the object world we know and the subject knower, whatever be the nature and validity of knowledge, there exists an inter-mediating process of which we are normally totally unconscious and only discover by the accident of abnormality, yet a process which it has been found possible to subject to very elaborate and instructive analysis,—the integrating work of the nervous system. No one, philosopher or physicist, psychologist or physiologist, can dismiss this as irrelevant. Indeed in a certain sense it is the pivot on which every theory of the ultimate data of science turns. What the philosopher takes as ultimate datum in experience, what the psychologist takes as simple sense quality, is for the physiologist an abstraction. The external object of the scientific realist's direct apprehension is for physiology a group of functional events. This group divides itself for the experimental neurologist into two sub-groups which can be,—this is Dr. Head's contention—completely dissociated. One is a quality group, the other a projection group.

No less striking in Dr. Head's account is the association of the neurological function in cases which we regard scientifically as distinct in kind, viz., projection in space and sequence in time. It is significant that from totally different data and by totally different methods Dr. Head reaches precisely the identical position of Professor Whitehead, that the unit is not an instant but an event.

Mrs. Stephen has given us the philosophical aspect of the problem. She has expounded a general principle and a particular standpoint. With both I find myself in complete agreement and they seem to me of fundamental importance. The general principle is that the data of science are determined

by a practical and not a theoretical interest. It is in effect the "application" or at least the "applicability" of its data with which science is concerned. This gives the clue to the true nature of science which distinguishes it from philosophy. It shows also why philosophy must criticise the data of science.

The particular standpoint, the Bergson theory, is one which will no doubt evoke dissent from many philosophers, yet I think it will be universally allowed that no philosophical theory of modern times is so entirely relevant in this present symposium. I can add nothing to what I consider the admirable short exposition of the "logical" character of space. It seems to me that the theory Mrs. Stephen has sketched is fundamentally in agreement with the contention of Prof. Whitehead in the opening paper. She grants to science material as its ultimate datum, but declares space to be intellectually imposed on the data, and time to be something which illudes the grasp of science altogether. But what is the material she grants? It is certainly not ether. It is not any kind of stuff which occupies space and perdures in time. It is what Professor Whitehead calls "event," not something which takes place in time, but the whole of a psychical duration which we schematise by a concept of time. As datum of science, however, material is not real duration itself, for what science describes is the tendency of material towards "repetitions," and this tendency taken in abstraction is a fiction. What Mrs. Stephen shows us is that to become datum of science, "duration" must be spatialised and so to speak detemporalised.

My own contribution to the subject of this symposium concerns the philosophical aspect of the problem, particularly as regards the historical relation of philosophy to mathematical and physical science in the evolution of modern theory. The Principle of Relativity which startled the scientific world only some ten years ago, as the result of a series of experiments, and which struck the ordinary mind as a paradox, was historically not novel at all.

In the seventeenth century two scientific instruments of fundamental importance and of paramount significance in the advance of scientific knowledge were invented, the telescope and the microscope. . Why mankind had waited so long for them is a mystery, for they were nothing more than practical applications, worked out by mathematical deductions, of the observation, which cannot have escaped primitive man, that objects seen through a convex transparent body, such as a drop of water, are visually magnified. The new instruments brought new realms of existence within the range of accurate observation, but they were also the occasion of a philosophical discovery of a curious nature and of wide speculative interest, yet one which appeared in that age to have importance only for the kind of philosophical theorising which inductive science could afford to ignore. The discovery was that "great" and "small" have no absolute meaning, that magnitude is not reality, is not part of reality, is not a qualification of any real existence.

When we look at an object through a telescope or through a microscope we describe the effect as magnification of the object, yet it is quite clear that the object undergoes no kind of alteration whatever. If, then, we try to correct our statement we shall probably say that the object is unchanged, but its appearance is magnified, yet this is not only a contradiction in terms but a gross inaccuracy. An appearance cannot be magnified, and also the new object which we see through the instrument is not only different in the appearance of its proportions but in kind. We may work out a point to point correspondence between the two appearances, but this would be a purely logical undertaking; so far as the imagery itself is concerned, they are completely different. What in fact happens is not a change in the object or in its appearance, but a change in point of view. The instrument enables me *pro tanto* to view the world as it would appear to an observer in another system of reference.

I will state the argument as it presented itself to Malebranche in the latter half of the seventeenth century, and to Berkeley at the opening of the eighteenth. Suppose I take a line an inch in length, I can prove mathematically that it is divisible to infinity, yet a very moderate fraction of the inch brings me to the limit of my range of vision and smaller fractions, therefore, do not for me exist. But I may take the inch to represent a mile and then at once hundred thousandths of the inch become appreciable. Again, take the mite, that is, any living creature which for me is the *minimum visibile*. It has no parts, for any part, its foot, for instance, is less than the *minimum visibile*, and for part of a *minimum visibile* to exist is contradictory. But place the mite under the microscope and I change my standpoint, I view reality as it were from the mite's standpoint. I find that the mite has an organism to some extent the counterpart of mine and a world with magnitudes correspondent to mine. So not only has the mite a foot but its foot is the same size as my foot. That is to say, from, my ordinary standpoint, the mite has no foot, from my microscopic standpoint, if it be, as it may be, exactly correspondent with the mite's standpoint, the mite has a foot measured by the same scale of magnitude as mine.

Such an argument is generally supposed to be concerned purely with knowledge and to leave unaffected any question of reality. It may even be held that the relativity of our knowledge of magnitude implies the absolute reality of that of which our knowledge is relative. It is commonplace knowledge, for example, that we possess no absolute standard by which to measure time, but no one bases on that fact a denial of the reality of time. So it may be held that the existence of an absolute space, time, and material, or as we now say, ether, is consonant with the fact that there are infinite points of view from which phenomena can be observed, indeed the necessity of giving unity and continuity to these points of view is the very ground of the theory. It is this that I desire to challenge.

I wish to show that it is theoretically inconsistent with facts, hypothetically absurd.

I suppose then that there are two observers, one of whom, A, has telescopic vision, and sees the world as we see the heavenly bodies when we look through a telescope; the other, B, has microscopic vision, and sees the world as we see ordinarily invisible objects through a microscope. I suppose then that each observer looks at the same object, let us say, the sun. To A it is a large expanse on which he distinguishes the various markings known to astronomers; to B it is a minute point of light. It is a greater distance from B than it is from A by the proportion in which the space of B's vision is greater than the space of A's vision. How am I to adapt an absolute space, time, and ether to these two observers? The first question I ask is: Does the same amount of ether occupy the larger space of B and the smaller space of A? If yes, then as ether must occupy fully the space of each observer, because light is propagated throughout each space, is the ether more condensed for A and more tenuous for B? If so, then what has become of A's excess of ether, and from what source has B made good his shortage? (Note, that A's excess cannot be balanced against B's shortage, for they are by the hypothesis simultaneous observers.) My second question is: Will a light signal leaving the common object of both observations, *i.e.*, the sun, be received simultaneously by A and by B? If yes, then does light travel with x times greater velocity for B than for A? If no, then is the common object of A and B in two different places?

The usual explanation of this phenomenon of telescopic and microscopic vision is that each is a case of deformation of spatial appearance analogous to astigmatic vision, or to the distortion given by a convex mirror, or indeed to the distortion of ordinary vision in the appearances we name perspectives. But there is an essential difference. In the case of distortion there is compensation, every more is compensated by a less. In the case of the two observers, however, there can be no

compensation, the inch of one is the mile of the other. If they travel together from a common starting-point to a common destination, A will either accomplish the journey in less time than B or else travel with a much slower velocity. The space intervening is different in extension for each. How then can the ether be absolutely identical?

The modern principle of Relativity is associated with the names of Einstein, Lorentz, and Minkowski. It is no derogation to the genius and intellectual power of these workers to say that their quite original and independently formed speculations are really rediscoveries of ideas which were promulgated by the philosophers of the seventeenth century. These ideas were completely eclipsed by the discovery of the law of gravitation by Newton. Descartes's doctrine that material substance consists in extension alone is the modern theory of Relativity, and without a difference. The change and progress in our concepts of the ultimate data of science consequent on the improvement in instruments and methods has left the concepts themselves fundamentally unchanged. Descartes said that when matter is moved its extension is moved and there is no vacuum. This is precisely what those mean who say that space is variable and that there is no ether. And the curious thing is that the arguments used in Descartes's *Principia* are precisely those which modern physicists are now using. The fundamental and pivotal argument on which Descartes relies for his theory that extension is attached to the moving system, and there is no vacuum, is that on any other hypothesis a science of geometry is impossible. The measurements I make in geometry and the properties of geometrical figures are measurements and properties of the extension which is attached to my system of translation, and they are not measurements and properties of a hypothetical extension in relation to which my system is translated. My geometrical figures and their properties are equally true for me in my ship's cabin (Descartes's illustration) and for the observer on the shore, only because

they have reference to the extension which is attached to each observer's system. Suppose them to apply only to an absolute extension left void by each system's translation and not only their truth is meaningless but their formulation is impossible. This is, as I understand it, the modern argument. In fact, if the traveller whom Einstein imagined leaving our earth on a projectile with a velocity the 20,000th part of light, absent two years, and then returning to find we have aged two hundred, had really left us in 1719 and had just returned to take part in our symposium, it would certainly not be any novelty in our ideas which would convince him that two hundred years had elapsed in his two-year journey.

There is, however, a difference between the older and the more modern theory. Malebranche and Berkeley (*Siris*, 304) both drew the conclusion that there is no magnitude, there is only perspective. (The terms are mine.) I doubt if modern relativists are prepared for this conclusion, although I cannot see how they resist it. Physicists seem to me invariably to treat electrons, corpuscles, etc., as being not merely, like the stars, perspectively remote, but in themselves absolutely small. They tell us, for example that electrons, etc., are only concepts, by which they mean not that they are logical constructions but that they are so infinitesimal absolutely that they cannot possibly be manifested to sense perception, their dimensions being in fact beneath the lowest amplitude of light waves to which our vision is sensitive. And further when we ordinarily represent to ourselves the relativity of the criterion of magnitude we do so by employing a device. We imagine an observer in the universe of bodily proportions so vast in relation to our own that the sun and planets and stars of our world become the atoms and electrons of his. But when we imagine the Brobdingnagian proportions of our Micromegas we are still preserving the absolute proportions or ratios of our own objective world, the only difference is that our atoms are his infra-atoms, our stars his atoms, and his stars our supra-world.

This is no difference at all, the physical world remains with absolute magnitudes. What we have to realise is that when an observer changes his perspective, it is not his bodily magnitude which changes, for this is always within his perspective. An observer is a subject of experience; *i.e.* a mind, essentially unextended, he has no magnitude.

The true philosophical doctrine is that which was held by philosophers in the seventeenth century. There are infinite perspectives and no magnitudes. This is the same as saying that magnitudes are derived from perspectives, and perspectives are not relative to or conditioned by or dependent on magnitudes.

It is perfectly consistent with this doctrine to hold that space, time and material are the fundamental data of science. But if so, then the sense in which they are so is not that they are absolute entities but that they are derivatives of that particular perspective which for us human beings constitutes our system of reference.

III. SYMPOSIUM: CAN INDIVIDUAL MINDS BE INCLUDED IN THE MIND OF GOD?

By HASTINGS RASHDALL, J. H. MUIRHEAD, F. C. S. SCHILLER,
and C. F. D'ARCY, Bishop of Down.

I. *By* HASTINGS RASHDALL.

I THINK it is unfortunate that this Symposium should be opened by one who gives the negative answer to the question. It will hardly be denied that this answer is the view of common-sense. I am very far from making common-sense, *i.e.*, the average opinion of the unphilosophical, into a final court of appeal in matters of metaphysic. But the opening of such a discussion would seem naturally to belong to those who deny, rather than to those who affirm, on this particular matter what may be called the vulgar view. Moreover, the arrangement which has been adopted puts me under a peculiar disadvantage. It is a general principle of philosophic strategy that the offensive is the best defensive. And that is peculiarly the case on such a subject as the present: because the only kind of argument which is possible to a disputant who affirms what seems to him an obvious and self-evident truth is to exhibit the difficulties in which we are landed by the denial of it. Since, however, those who assail the common-sense thesis are by no means agreed either as to what they affirm or as to the grounds on which they affirm it, it will be always possible for my antagonist to contend that he is not responsible for the positions or for the arguments of any particular writer against whom I may have tilted. However, since it has been otherwise determined, and I have lost the advantage of position, I must do my best.

To me it seems obvious and self-evident that a moment of

consciousness is always unique, and cannot be thought of as included in or forming part of some other consciousness. When this position is attacked, it is usual to mix it up with some quite different positions with which it is not necessarily connected. The maintainer of this thesis is made responsible for various theories about eternally pre-existent spirits or windowless monads or impenetrable individual minds, or for pluralistic denials that the Universe is a Cosmos, or the like. I am not now defending any of these views—none of which, indeed, I hold. Nor for the moment am I defending *any* particular theory of the Universe. I do not mind how close and intimate you make the union between the Divine Spirit and the lesser spirits which are supposed to be contained in it. The “Universal Mind” may have the most perfect and intimate knowledge of these spirits. He may know them, as the fashionable phrase is, from within. He may know all they know, experience all that they experience, apprehend the same world which they apprehend. They may be dependent upon Him in the most intimate manner conceivable. He may be the cause or the ground or the condition of their existence from moment to moment. They may with Him form an Absolute outside which nothing exists. I deny none of these things. What I am denying is simply that the consciousness at any moment of an individual mind can be thought of as at the same time part of a wider mind. Take, for instance, a moment of pain—say tooth-ache. I maintain that it is meaningless to say “The Universal spirit feels that tooth-ache: that tooth-ache is part of the experience of the Universal Mind, and there is no tooth-ache in the world which does not form part of it.” I believe that to be equally the case with consciousness looked upon on the knowing side: it would equally be true of my consciousness of the most abstract truth. My knowledge of Euclid’s axioms or Euclid’s propositions is not at the same time part of the divine consciousness of them. But the difficulty of the position

comes out with peculiar clearness when applied to the case of pleasant or painful sensations—particularly painful ones.

The only way in which I can argue in support of so obvious a proposition is either to show that those who appear to maintain it do not really or consistently maintain it; or that, in so far as they really do so, they involve themselves in inextricable difficulties, ambiguities, or contradictions.

Now, in the first place, it is clear that the position which I am attacking is one which can only be held by those who really believe in a Universal Mind who is neither, on the one hand, (*a*) simply the sum or the system of individual minds, however much they may be looked upon as forming a system which is not a mere aggregate, however much you may insist upon the doctrine that the universal is more than the sum of its particulars; nor, on the other hand, (*b*) an Absolute which is really thought of not as mind at all but as an ultimate being in which all minds are included, and of which they constitute in some sense the attributes—an ultimate being in which all distinction between subject and object, mind and matter, is transcended and annihilated. It is, therefore, unnecessary to examine the position of Spinoza or of those Hegelians who approach the Spinozistic position. There is, I believe, something like a consensus among present-day philosophers that Spinoza did not believe in a Universal Mind, that his "God" is not the God of religion or of spiritualism or of idealism, but simply a name for nature or the universe, one attribute of which is that which reveals itself in the minds of finite spirits, but which has no existence outside those spirits. I strongly suspect that many Hegelians who use this language about an all-inclusive Absolute are in much the same position. How far this is true of Hegel himself, I will not undertake to say. Dr. McTaggart would, I believe, support me if I contended that that is Hegel's real meaning. There are others about whom no such doubt can be entertained, *e.g.*, the late T. H. Green. Green undoubtedly

believed that God is a self-consciousness which is not merely the finite spirits taken together; but he was so vague about the relation between the universal self-consciousness and finite spirits, he tends so much vaguely to identify them without asking what kind of difference there is between them, that it is really impossible to subject his view to any clear analysis. Moreover, the tendency of Green and his school was to make the Universal Ego simply a thinker. Professor Hobhouse is quite justified in saying that it is difficult to discover what place he assigned to sensation in the formation of our knowledge, except that it is a contemptible one. But one thing is certain. Green would have been horrified at the idea of making the Absolute feel or experience a human tooth-ache. It may be doubted whether Green's Deity would even have been aware of so contemptible and "particular" an accident. Green can only make the Universal Mind all-inclusive by treating individual sensations as mere nothings. They are not outside God, because in point of fact they do not exist at all. They are in fact the Platonic $\mu\eta\ \acute{o}\nu$. Green is not really an advocate of the thesis which I deny.

Very different is the position of Mr. Bradley. Nothing can exceed the definiteness with which Mr. Bradley asserts that the experience of finite spirits is ultimately part of—or rather (since the word "part" implies relation and the relational form is the mark of unreality), absorbed in, an adjective of, an element in, a single relationless and all-inclusive experience. Moreover, in this experience these finite experiences are not merely absorbed; they are transmuted. When looked at from the point of view of the Absolute, in so far as they come into the Absolute experience, they lose all in them that is inharmonious, imperfect, evil. No previous writer had ever perhaps asserted with so much definiteness that each human tooth-ache enters into and forms part of the absolute experience. But we are further told that, though our pains enter into that experience, they do not enter into it as pains. The pain is transmuted

into, and becomes an element in, a whole which is not painful, as discords are said to be resolved in the symphony. Well now, if that is so, I submit that Mr. Bradley admits that pain as such does fall outside the Absolute experience. If God does not feel the pain as painful, He does not feel what I feel. And what I feel is something. To me this tooth-ache is painful: my pain has an existence, however imperfect, self-contradictory and generally contemptible an existence it may be. If, therefore, there is no pain inside the Absolute experience, the pain—the painfulness of the pain—falls outside that experience. You may say what you like about the individual's experience, or the individual himself, not being ultimately real, about it and he being mere adjectives or the like. That does not affect the proposition that pains have their place in the universe—pains felt as pains. No account of the universe can express the whole truth about it which does not recognise that fact. If the absolute experience does not include that fact, then it is something which is outside the absolute experience, so long as you mean by the absolute experience the experience of a conscious mind. It is not outside the totality of things: it is not outside the Absolute, if you like to distinguish between the Absolute and the Universal Mind: but on Mr. Bradley's own showing, it is not an element in the Universal Mind, and yet he does not deny it some sort of existence. I have nothing to do with the ultimate metaphysical reality of finite minds and their contents. I am only attacking the psychological proposition that this moment's painful consciousness of mine can be regarded as being also at the same time the painful consciousness of a larger mind. And that is a proposition which Mr. Bradley does not assert.

I have so far been criticizing Mr. Bradley upon the assumption that he really believes in a single conscious experience which is more than the combined (if you like), the absorbed, transmuted, harmonized, and (if I may so say) optimized experience of all the finite minds taken together. But as we

proceed with *Appearance and Reality*, especially as we read it in the light of its author's later utterances, it becomes more and more doubtful whether he really does believe in any consciousness that is not simply the consciousnesses of men and animals looked at from some transcendental point of view in which the differences between them vanish, and they pass into mere elements in a whole. From this point of view the Absolute becomes a mere ideal of a possible experience, never actually realized—a logical implication of knowledge but an implication which involves the suicidal consequence that all knowledge is necessarily false. In so far as Mr. Bradley gives up thinking of the Absolute as a conscious experience, his position approximates to that of Spinoza, and he can still less be regarded as holding the thesis which I attack. For one who does not believe in a Universal Mind the problem does not exist. For Mr. Bradley as for Spinoza it may be true that the only real experience of my pain is as the adjective of the Absolute, but then that really existing Absolute is not a mind or a consciousness at all.

I have not dealt with the question whether there is any real meaning in the language used by Mr. Bradley—and also by the eminent philosopher who is in the too modest habit of speaking of himself as a disciple of Mr. Bradley—about pains and other experiences being absorbed, harmonized, transmuted, and the like in the Absolute. The position of Mr. Bradley and Professor Bosanquet in this matter has never been so acutely criticized, its essential meaninglessness has never been so remorselessly exposed, as in Professor Pringle-Pattison's recent book, *The Idea of God*. On this head I can only humbly subscribe to all that he has said. And yet, after all, Professor Pringle-Pattison himself ends by maintaining verbally the same thesis of an inclusive Mind, inasmuch as he still persists in identifying God and the Absolute; and the Absolute is of course, for him as for every one who uses the term, all-inclusive. But in dealing with Professor Pringle-Pattison's position, I

shall venture to contend not merely (as with Mr. Bradley) that he ought logically to admit all that I am asserting, but that he does explicitly admit it, however inconsistent it may be with his other contentions. "It takes two not only to make a bargain: it takes two to love and to be loved, two to worship and to be worshipped, and many combined in a common purpose to form a society or a people." For Professor Pringle-Pattison as for me—God and man—God and any man—are two minds, though they are doubtless part of one universe or totality of being.

I will not quote any more of the passages from his book which seem to me to contain an admission of all that I contend for, and will only refer to the still more explicit statements made in a reply which he did me the honour of making to my article in *Mind* upon his book. If ever controversy is justified it is when it leads to such explanation as that article contains: whether for explanation the word "recantation" might not be respectfully substituted, I will leave others to judge. "No mental experience of mine can, in the sense in which it is my experience, form part of the experience of any other mind. This is the formal distinction of selves which Professor Bosanquet so disparages, and which I have defended against him in a series of passages some of which Dr. Rashdall quotes. I reject the whole conception of the 'confluence' and overlapping of selves as existents. A self may be largely identical in content with other selves, but to speak as if their common content affected in any way their existential distinctness is, I contend, to be the victim of a confusion. Uniqueness belongs to the very notion of a self or consciousness. No one ever can, literally or directly, see the world through my eyes. That being so, it follows—follows, I might say, *ex vi termini*—that it is meaningless, as Dr. Rashdall contends, to speak of one consciousness as 'included in another,' or to speak of 'a Mind which includes all minds,' and of man as, in that sense, 'a part of God.' What holds good as between finite conscious-

nesses would also be true of a divine experience, so far as that is conceived as a self-consciousness essentially similar in structure to our own." "So far, then, as we think of God simply as self-consciousness, this element of otherness must remain: the experiences of finite selves do not form part of the divine experience in the same sense in which they are the experiences of the selves in question."

Save for the qualification contained in the last half-sentence, I want nothing more. I should have liked to add "or in any other sense." I would only submit that in the light of this explanation of his real meaning, there are a good many passages in *The Idea of God* which should be cancelled or re-written. These passages are, to say the truth, contained chiefly in his criticisms upon myself. After reading them, I feel that Professor Pringle-Pattison objects to my saying exactly what he says himself. As one so constantly finds in philosophical criticism, one man may steal the horse while another may not look over the fence. He objects to my talking of "separate and mutually exclusive centres of consciousness." But I have not called God and man "separate" or "mutually exclusive" in any sense in which the Professor has not so called them. When he goes on to accuse me of treating the universal as one of the particulars, he is simply falling back, as it seems to me, into that way of treating God as a mere abstract universal against which he has himself so energetically protested. And above all, as it seems to me, he fails altogether to give adequate reasons for that identification of God with the Absolute from which I dissent. What his defence seems to amount to is simply this; he admits that he uses the term God in two senses. He admits that God considered as consciousness does not exclude the finite centres of consciousness: but in view of the essentiality of God to the whole universe, in view of the identity of content between our minds and the divine mind, of the presence (in limited and imperfect degree) of the same ideals of truth, beauty and goodness which are of the essence of His

Being, he thinks himself entitled to use the word God also to denote that All outside of which there is nothing, and which philosophers have been in the habit of calling the Absolute. I submit that this usage is, to say the least of it, confusing. It savours a little too much of an attempt to keep on good terms with the religious world which thinks of God as a Self and with that philosophical world which will have no God but the Absolute. It would be better, if we must keep the word Absolute, to use the term God only for "God considered as a consciousness" and the term Absolute only for "God considered as all-inclusive." Nothing but a tradition of the schools prevents Professor Pringle-Pattison from recognizing frankly that God and the selves together make up one Absolute. On this particular point the difference between us is merely one of language. Whatever other differences there may be between Professor Pringle-Pattison's view of the universe and mine, they are irrelevant to the present issue.

No doubt some of my hearers may be impatient at this criticism of a particular writer, for whom they are not responsible. I will defend myself in the language which Professor Hobhouse has used in reference to John Stuart Mill. "Mill," he says, "was guilty of shortcomings and inconsistencies, like other philosophers, but the head and front of his offending was that, unlike many other philosophers, he wrote intelligibly enough to be found out." It is for that reason that I have taken Professor Pringle-Pattison as an illustration of the view which I am examining. But I believe that the same line of criticism could be adopted with every other writer who has used similar language—except, indeed, the mystics who frankly admit that reason is not adequate to the task of reconciling their contradictions, and that you have got to enter into some super-logical experience in which contradictions vanish. I admit that I cannot follow them into that region.

There is only one other line of defence which is possible to him who undertakes to defend views which to him seem truths

against criticism of his opponent's and that is to show the source of the mistake which has been so widely made. No one has pointed out the mistake more clearly than Professor Pringle-Pattison; it consists in taking identity of content to be synonymous with identity of existence.

In so far as I know what another person knows, it is assumed, I am identical with that other person. If, therefore, God knows all that I know, my being must be entirely comprehended in His. Another way of putting the same point is to say that the mistake is due to the habit of assuming that the real being of a mind, its *principium individuationis* is, as may be the case with the being of a mere thing, constituted by what that mind is for another mind which knows it. It is, therefore, argued that if *per impossibile*, two disembodied minds could have exactly the same experiences, they would be not two minds but one. I submit that there is nothing contradictory or inconceivable in the supposition that there might be two minds whose content was exactly the same; and yet they would be two and not one; although, so far as all that a third person knew about them goes, there would be no means of distinguishing between them. All that the third person could know would be that there was such a content in and for two minds. The essence of a mind is what it is for itself, not what it is for an other. The essence of a mind is not to be known but to know, to will, to feel—in a word, to be conscious. The individual mind itself would have no difficulty in distinguishing itself from the other mind which repeated its experiences; it might know that there was another such mind in the world, but it would not have the least difficulty in distinguishing itself from that other or any number of such others. Consciousness is not the same thing as thought about consciousness.

The absurdity of the contrary supposition may be illustrated by supposing two minds with a content partially the same—thinking (to some extent) the same things, willing the same things, feeling the same things. In a certain sense, it is true

to say that, so far as the contents of the two minds are alike, they are the same; though it will hardly be denied that after all it remains true that, even in respect of this identical content, there is also a difference, since the identical content is experienced twice over. All similarity is identity and difference; and so long as there is that consciousness of the same twice over, there is difference as well as identity. Now let us suppose that these two consciousnesses were to become more and more alike, *i.e.*, that the identity becomes greater and greater, the difference less and less. If there is any difficulty in supposing, even with the *per impossibile*, that increase of experience should involve decrease of individuality, we may suppose that the identity is secured by a gradual deterioration, including complete forgetfulness of their own differing past. It is admitted that, so long as any difference in content at all remained, we might still speak of two minds, two knowing experiences or two pains. But now let us suppose that the difference in content disappears altogether; it would follow according to the contention, that they would suddenly cease to be two minds and collapse into one. Surely that inference constitutes a *reductio ad absurdum*. Up to the moment of complete identity of content there are two consciousnesses of the common content: why should that twoness disappear because the content becomes absolutely identical?

There is one possible line of reply on which I must say a word. The champion of the all-inclusive mind may fall back upon this line of argument: "All you say may be true so long as you look at things from the temporal point of view. So long as you mean by minds so many streams of consciousness in time, it is true that these must be regarded as numerically different from one another, and they would be different from the divine mind also if that mind were simply another succession of conscious states. But these streams of temporal consciousness are not the reality: nor do they, as such, even make parts of the reality. The Absolute Mind is super-temporal; and from the timeless

point of view, streams of consciousness become nothing and are reduced to an aspect of a changeless, eternal mind. Just as the mutual exclusiveness of successive moments of consciousness is from the absolute point of view a mere illusion, so the numerical identity and distinguishableness of contemporary streams of consciousness is a mere delusion, which disappears when looked at from the absolute point of view." To this line of thought I should reply: (1) I do not admit that from any possible point of view, the successive moments of consciousness can be reduced to mere aspects or adjectives of a reality which is timeless. One unintelligibility is not made more intelligible by comparing it to another unintelligibility. And (2) even if you could treat time as unreal or (with Green) regard the individual ego as timeless, I do not see that that in the least reduces the difficulty of identifying two conscious selves with one another. I recognise the difficulty of regarding our temporal point of view as the only and ultimately truthful point of view. I do not believe that the old Kantian antinomy has ever been transcended. But, whatever be the true way of bridging it, it cannot be bridged by the simple denial of the validity of time-distinctions. To think of God as a time-occupying consciousness like ours—persisting through a succession of moments or rather a continuum of experience—may be, and doubtless is, an inadequate way of thinking; but it is at least more adequate than to talk about Him as timeless. For our knowledge nothing can be timeless except truth. Very largely, I believe, the notion of the All-inclusive Mind arises from the same mistake as the notion of a timeless Absolute. Both arise from the confusion of content with existence. Existence, of course, cannot be abstracted from content, but neither can content be abstracted from existence. Or rather it *can* be abstracted in thought, but such an abstraction is not reality. To think of the Absolute Mind as timeless is to confuse abstract truth or knowledge with the mind that knows. Truth, of course, is timeless; but truth is not reality. There

must be some way of getting over the antinomy involved in our thought of time; but nothing can be gained by using meaningless language about a timeless mind or self. We do not understand time, if I may borrow an expression of Professor Stout's, but we shall not understand it any the better by talking nonsense about it. And even if we do attempt to think of a mind or an experience that is timeless, the relations between such a timeless experience and our essentially temporal experience would remain as unintelligible as ever. The notion of a mind which eternally or extra-temporally swallows up experiences which, as actually experienced, are unique and individual, involves the reduction of the facts of consciousness to mere appearances, and in the end to delusive appearances. It involves the line of thought which many have attempted to follow, but which hardly any Western philosopher has followed out to its logical consequences except Mr. Bradley. And when Mr. Bradley after all admits that the Absolute exists only in its appearances, he is really admitting that the Absolute is after all only an ideal of a possible and yet intrinsically unattainable knowledge—not a self or a mind which includes other minds. In an ideal of conceivable knowledge, a knowledge which passes beyond knowledge into reality, the experiences of many selves may no doubt find a place. But they are no longer the actual experiences of the finite selves. Considered as experiences of finite selves, they are indeed from that point of view appearances; but it is to these experiences that my thesis relates. Once again, the problem is a problem of psychology rather than of metaphysic, though I should hasten to add that a sane metaphysic must not contradict sane psychology.

Before I conclude, I should like to return once more for a moment to Professor Pringle-Pattison's criticisms upon myself. His reply to me makes it plain that he did not object to my language about the relation of God to the human mind because of my denial of the all-inclusive notion of God, but

because of certain other views of mine as to the relation between God and Man. In particular, my language seemed to him to exaggerate the analogy between God and the finite self—to treat God too much as if He were merely another self, only more knowing, more powerful than other selves. In fact his criticism amounts simply to the old cry of anthropomorphism which is always raised when a philosopher attempts to take theism seriously. I submit that Professor Pringle-Pattison has gone much too far in this direction himself to be entitled to throw that stone at me. I agree with him that our only possible knowledge of the ultimate nature of reality is to be derived from our knowledge of the human mind at its highest. But I should admit fully the inadequacy of such knowledge. I should be quite ready with the schoolmen to say that all our language about God must be understood *sensu eminentiori*, a much more reasonable creed than a monism of the pantheistic type. I submit that, when it is admitted that our ideas about ultimate reality are inadequate, it is impossible for us to show in detail wherein the inadequacy consists. A theistic view of the universe must admit a large background of agnosticism: but it is, I submit, illogical first to use such language as mind, self-consciousness, person, and then to be continually shouting “anthropomorphism” whenever one encounters some obvious implication of these terms. We must of course deny to God characteristics of mentality, consciousness, personality which are obviously inconsistent with the idea of a mind which is to be regarded as “somehow”—here I purposely avoid using more definite language which may be disputed—the ground of all reality, particularly those features of some human minds which are absent, absolutely or relatively, in the highest human minds. We must deny to Him the limitations which are intrinsically inconsistent with the very idea of a universal knowing or willing. Yet we must not deny to Him the characteristics which belong to the nature of mind or consciousness as such. To be unique is a charac-

teristic of the highest as of the lowest consciousness. My submission is that, if and so far as we are going to recognize as the ultimate ground of things a mind greater than any mind we know, the otherness of that mind to all other minds must be accepted as a consequence of our hypothesis. That otherness belongs not to the limitations of consciousness but to its "esse." The hypothesis of a mind which altogether and completely overcomes and annihilates this otherness is one which there is nothing in our human experience to suggest, to justify, or even to make intelligible. It constitutes all that we mean by calling it mind. Certainly every mind—divine or human—must be thought of as a part of a whole which includes all minds and the world which all minds know. Certainly these minds must form a unity, and for those who include in these minds a mind which can be entitled to the name of God, the superiority and the all-pervasiveness of this mind cannot be too strongly asserted. The minds must form a unity; but that unity is not the particular sort of unity which belongs to self-consciousness. The Absolute certainly—if you must indulge in that "blessed word"—includes other minds; God, if He is a Mind, does not.

II. *By* J. H. MUIRHEAD.

DEAN RASHDALL complains that owing to the order of these papers he has lost the advantage of position. Instead of leading a brilliant offensive, as he is so well capable of doing, he has had to dig himself in in a defensive of negation and await the attack of others. After hearing his paper, we shall agree that he has executed this movement with his usual ingenuity and thoroughness and succeeded in fortifying himself with bristling lines of wire entanglements; but I wish to add at once without, as it seems to me, his usual caution. Granted that by inclusion is meant the destruction of separate existence, it is easy to show that it is a contradiction in terms to speak of minds or indeed of anything as included in anything else. But when this position is at once extended, as it is by Dean Rashdall, into the denial that there is any sense in which a mind can be said to form a whole with another mind, the line of his trench seems to me lamentably inadequate to the ground it seeks to defend. In other words he has proved too much. One might have thought that the instance with which he himself starts "every moment of consciousness is unique," would have been sufficient warning against this mistake. What, we might ask, of the separate moments of an individual mind? It is quite true that there is a sense in which every moment is unique, but it is a uniqueness which not only falls within the whole of the continuous life of the individual but which derives its character of uniqueness from its relation to that whole. If this criticism be valid my dissent (it will be seen) from Dean Rashdall consists not in denying that he has made good his contention with regard to a particular interpretation of the relation of inclusion, but that he has failed to realise that the matter cannot end there. There are interests involved which he would be the last to deny and which make it necessary to go

beyond a blank negative and to inquire whether there may not be a sense in which, while safeguarding the valuable element in the independence for which he stands, we may yet support the affirmative thesis. I agree with Dean Rashdall that it might have been well to have had the sense in which any of the symposiasts is prepared to do this clearly stated at the outset.

I am not any more than Dr. Rashdall in the secrets of those who are responsible for the conundrum which stands at the head of this Symposium. But if I might surmise what they had in mind, it would seem to me somewhat as follows. (The members will forgive me if I seem to be recalling ancient and familiar history):—

Since the publication of *Appearance and Reality* in 1893, and more particularly since the brilliant anti-theistic application of its principles to the solution of the problems of Individuality and of Individual Value and Destiny by Mr. Bosanquet in the sphere of religion, we have had within the precincts of what is still perhaps best described as Objective Idealism, a remarkable reaction in favour of a form of doctrine, which, while avoiding the error of an unmitigated pluralism of finite and infinite mind, shall yet preserve the essentials of self-hood to both. It would be invidious to single out names, but the writers who have taken this line, with whom I happen to be most familiar, are Professors Sorley and A. E. Taylor, Mr. Clement Webb, and Professor Pringle-Pattison.

I wish to say at once how deeply I sympathize with this movement. I have always thought that the Hegelian doctrine of "Aufhebung" in being translated into the Bradleyan "transcendence" and "transformation" has been in danger of losing an essential part of its original truth. I think it is William Wallace who reminds us that *Aufheben*, like the Scotch "put by" or "put past," has a double significance. The thing is not merely put aside or relegated to the past, but held over and carried on into the future. The emphasis which modern idealist writers (mainly, I think, English) have put

upon the first part of the meaning has thrown the second into the background—and gone far to obliterate it altogether. It is not denied that in the transition from the lower to the higher category, *e.g.*, from mechanism to life and from life to consciousness, the lower, with all the transformation which it suffers, remains a recognizable element. It is only when it comes to a question of the limits of our ordinary self-consciousness, whether in the life of will, of knowledge, or of feeling, that it is thought necessary to suggest that, in transcending these limits, the focalization which is the essence of self-consciousness must disappear in a form of experience admittedly unintelligible, and only by courtesy describable as experience at all. It is not necessary to maintain that the highest and most real form of experience is merely an enlarged replica of our finite and recognizably imperfect self-consciousness. What it does seem necessary to maintain is that the focalisation to which the universe attains in self-conscious minds remains the essential form of its highest manifestations. Instead of conceiving of it as an *Aufgehobener Standpunkt* in the ordinary sense of the word, might it not be truer to conceive of it as intensified, and at the same time solidified in the wider, more comprehensive, and harmonized experience which these writers mean by the Absolute?

Be this as it may, in such a reading of the ultimate reality, the necessity of denying mind in any intelligible sense to the Absolute, and therewith of making a distinction between the God of religion and the Absolute or Eternal of philosophy seems to be removed.

But it is idle to deny that these advantages are purchased at a great price, or that the new theism brings its own problems with it. With the interpretation of the whole or the Absolute as mind comes, in a new form, the question of its relation to the individual selves of our ordinary experience. That in some sense the Absolute must include the relative, the infinite the finite, seems to be demanded not only of the theoretic,

but of the religious consciousness.* Yet it would seem to be just this relation of reciprocal inclusion that the argument which has brought us so far seems to render difficult to conceive. We may, indeed, having arrived at this point, take refuge in ignorance, and renounce all attempts at a solution as in its nature self-contradictory. This seems the position taken up by Professor Pringle-Pattison in his *Gifford Lectures* on the Idea of God.† But that his critics are dissatisfied with this reply is proved, if by nothing else, by our assembly here. Had I myself been satisfied with this result, I should, I suppose, not have accepted the invitation to take a leading part in the discussion. As it is, and in view of the admiration I have always felt for the author's wise philosophic caution, I recognize the risk I run in stepping in where he has feared to tread. I only do it in the conviction that, unless we can succeed in making the relation between the finite and the infinite spirit at least more intelligible than it is here left, we risk losing all that he and others have contended for.

What I propose to do is (1) very shortly to review the analogies that have actually been suggested by different writers. (2) In so far as any of them seems bound to inquire whether

* There are perhaps no religious phrases that have been more powerful and universal in their appeal than that which claims for the saint a life that is hid with Christ in God (Col. iii, 3), and that other which describes the ideal Christian experience, "I in them and Thou in me that they may be perfected in one" (St. John's Gospel xvii, 23 ; cf. xv, 4, 6).

+ "It is in the very nature of the case impossible that we should *understand* the relation (if one may even use such a finite term as relation) between a creative Spirit and its creatures, whether as regards the independence conferred or the mode in which the life-history of the finite being still remains part of the infinite experience. Finite beings know one another from the outside, as it were, the knower being *ipso facto* excluded from the immediate experience of other centres. But there can be no such barrier, we may suppose, between the finite consciousness and the Being in which its existence is rooted. It must remain open and accessible—it must enter into the divine experience in a way for which our mode of knowing hardly furnishes us with an analogy." (See the whole passage, *op. cit.*, p. 293.)

the relation so conceived can be properly described as one of inclusion.

There are three ways in which the attempt has been made by different writers to make the relation between the infinite and the finite mind intelligible. (1) There is in the first place what might be called the æsthetic analogy. The relation of the divine to the human mind has been compared to the relation of the dramatist to the characters in his work. I need not enlarge on the suggestion. Many probably besides Mr. Webb (*God and Personality*, pp. 126, 127) have felt its attraction, but I do not suppose it has satisfied any of us either from the philosophical or the religious point of view, and it is important before leaving it to realise wherein its unsatisfactoriness consists. It is not, I take it, that the characters have not a certain individuality and independence of their own. That is just what they have. R. L. Stevenson used to say that he did not make his characters do this or that: he merely watched them doing it. Nor is it, I think, that the existence of the characters depends on the author's or the reader's thinking of them, as the dead in the *Blue Bird* come in and out of existence as they are remembered or forgotten by the living. On any theory of a sustaining deity the finite must be conceived of as not only called into existence but preserved in existence by a mind that neither slumbers nor sleeps, neither forgets nor has to recall. The objection is that the characters receive the life and individuality, which they seem to, and really do possess independently of their creator, from their being conceived consistently with the laws of a real world, on which like their creator himself they depend. It is the nature of this *primary* dependence of both on a real universe that we are seeking to make intelligible to ourselves; and it is just this upon which the *secondary* dependence of created on creator in art fails to throw light.

2. Others have sought in the facts of divided personality and the relation of the subordinate to the principal personality

a clue to the relation we are considering (see *e.g.* A. E. Taylor, *Proc. Arist. Soc.*, IX, 206, 214). As contrasted with æsthetically imagined, these subordinate psychic personalities are at any rate existing entities. They are moreover substantial in a sense that makes it impossible to treat them as mere predicates of the principal or normal personality. A further advantage is the warning the recognition of the facts conveys against the dogmatism which assumes that in "personality" we have a crisp, easily definable idea and denies the possibility of overlapping and interpenetrating personalities. Lastly, the analogy seems to make comprehensible to us how, what in the divided personality has taken up an independent place in time as a real psychical entity—a "centre," or as I should prefer to say a nucleus of conscious experience, may gain in value by having to resign its separate existence and take its place as a subordinate element in a larger life. But it is just here that the analogy would seem to break down for the purpose of this paper. For in the first place the union is effected by a process of merging of the subordinate personality in the dominant, rather than a reformation of its contents within the form of a separate experience; and in the second place the change takes place by a process which, coming as we must assume it does from some change in the nervous conditions, if the subordinate personality could reflect upon it, would appear to it as something magical and coming from without (as in the case of Dr. Jekyll and Mr. Hyde, or the Bishop in Mr. H. G. Wells's *Soul of a Bishop*), instead of by a spiritual process of self-transcendence. What is absent in such cases is any fundamental unity of purpose with the normal personality, whether explicit or implicit; and to those of us who hold, with Dante, that the key to the relation of the finite to the infinite mind must be sought for in the possibility of a real unity of will and purpose, no analogy which ignores this can be of any real assistance.

3. It is just herein that the value of the third analogy to

which appeal has been made, that of the relation between the general and the individual will in society, consists. Admitting the reality of a general will in the sense not merely of a common element or abstract universal but of a dominating purpose which gives meaning to particular purposes, we can see how self-transcendence so far from meaning a sacrifice of individuality is the only way to realise it. The will that is one with the will of the whole is more of a will, the person who accepts the common good as his own is more of a person, than the will and the person that is still enslaved to some partial exclusive good. Since writing this paper I have read Sir Henry Jones's *Principles of Citizenship*, in which in Chapters III and IV this point is driven powerfully home. The point at which the analogy falls under suspicion for our present purpose is where it seems to strain the legal notion of corporate personality to cover the real separate existence implied in the full-bodied idea. To establish the analogy it seems as though we should have to fall back on a mysticism such as that which, at a certain stage in his mental development, attracted John Henry Newman, and which assigned their own angels to all forms of corporate life (*Apologia pro Vita Sua*, pp. 28, 29). If this, as we shall probably agree, is untenable, we seem to be shut up to Professor Pringle-Pattison's despairing conclusion. A question of this magnitude can obviously only be dealt with in the most cursory way in the space I have at my disposal. I must content myself with a bare hint of the line on which it still seems to me possible to find a more promising answer, and of the reason why Professor Pringle-Pattison and other writers who agree with him have refused to adopt it.

So long as we approach the question, so to speak, from below, that is from the point of view of the life in time of finite persons, forming themselves, in circumstances largely accidental, into communities, we shall find it difficult to see ground for any mind and will over and above their own. But that is only one and a very partial point of view. Philosophy demands

that we look at the matter of our world *sub specie eternitatis* : from the point of view of the principle, good, or purpose which is operative in the creative, preservative, and progressive improvement of terrestrial societies. From this point of view without cancelling in Spinoza's manner the substantial reality of the finite we can see how the purpose that the community embodies must be conceived of as living elsewhere than in the finite minds and wills which seek to give expression to it, seeing that it is from it they draw such substantiality and permanence as they possess. This being granted, we are strongly tempted to make a leap, seeing that from the idea of purpose to a "spiritual principle," and from a spiritual principle to a mind seems but a step. We think in this connexion of Green, whom in the article referred to, Professor Taylor seems to follow. But since Green's time the study of the teleological element in subhuman nature and the subconscious in man has brought home to us what, in Spinoza's phrase, "the body can do of itself," and we have to walk warily. Yet we may find the path is open still. What the "body" and its achievements force us to admit is the necessity of the hypothesis of latent purpose, as in physics we have to make the assumption of latent energy. But the physical analogy warns us of the limits of the validity of the concept. As we can only really conceive of latent energy as suspended kinetic energy, so we can only conceive of latent purpose as conscious purpose suspended in a medium of the unconscious. If we are serious with "body," a "bodily purpose" is as much a contradiction in terms as an "inert energy." It is for this reason that while I am unwilling to commit myself to the finality of the conception of purpose as we understand it, I yet hold that at the level at which we find it forced upon us we are free to assert that it brings with it and justifies the interpretation of the world, not only (in Schopenhauer's sense of the words) as will and idea but as mind. It is doubtless a difficulty that mind as we know it, whatever it may become through the

extension of its content, takes its starting point from a unique complex of organic feeling. This is a difficulty that attaches to any form of theism, but it can only seem formidable to one who fails to realise that such unique feeling is only the starting point, the mere *δύναμις* and not the essence or *ἐνέργεια* of individuality, and that it is mere dogmatism to assert that the one condition of such a nucleus is the constellation of nervous elements we are familiar with in our own bodies.

If this contention is valid, it seems to me to provide us with a point of view from which it is possible to see beyond the blank negative with which Dean Rashdall meets the question before us. Accepting the reality, and even, in the sense explained, the ultimate reality of selfhood, we may admit at once that there can be no inclusion of the human in the Divine mind, which implies the merging of one in the other. But to admit this is one thing, to deny that minds can enter into organic relations with one another in any way that justifies us in speaking of them as whole and part is quite another. There would surely be something paradoxical, except on the assumption of the hardest-shelled individualism, in admitting a relation of inclusion in this sense of lower forms of reality, *e.g.*, the chapters of a book or the members of a physical organism, and denying it of the highest. It is hardly necessary to traverse Dean Rashdall's examples to perceive their irrelevance to such a conception. We may be willing to recognise the truth of his contention with regard to pain and sensation, and yet maintain that even here there is a very real sense in which the same pain may be felt by two individuals. I am not thinking of Plato's pain in the finger, which is also a pain in the whole organism. Dean Rashdall would meet this by the denial of a separate mind in the finger. I would merely insist on the fact that uniqueness of sensory experience does not exclude, but is the condition of what we might call a sympathetic whole. It is not, however, on the possibility

of sharing these particular moments of experience that the case rests; but on the unity which is effected by that kind of sharing which is only possible to minds—the sharing of a common meaning. It is in the universal which is implicit in every particular human experience that minds meet and interpenetrate; and, granted there is a mind in whose experience the partially discerned meanings of our world form a harmonious whole, the quality of inclusiveness is not strained in being applied to such a relation. It is this application that finds support in our third analogy. A purpose is a universal. It is a meaning or direction given to particular actions. The actions, if you will, belong to the individuals, and cannot without contradiction belong, in the same sense, to another individual. But their purposes, in so far as they are harmonised, are included in the organic system of purposes which we have agreed can only be real in so far as they are the purposes of a universal mind. I shall be told, of course, that I am playing fast and loose with the ambiguity of mind. In such phrases as “let this mind be in you,” etc., or again, when “our wills are ours to make them Thine,” all that is meant is that we may share a content without ceasing to have our own minds and wills. But it is just the impossibility (admitted by both Professor Pringle-Pattison and Dean Rashdall) of separating existence from content that makes it legitimate to insist that the real unity of content must be conceived of as penetrating the existence of the separate wills and legitimising language which, if unfamiliar to common sense, is at least natural to the deeper forms of religious experience.

I do not claim that this attempt to justify the language of religion disposes of the manifold difficulties that surround the attempt to identify the Supreme Will of religious experience with the philosopher's Absolute. It is addressed to the single point of the legitimacy of expressing the relation of the Supreme Mind, in which the meanings and purposes of finite minds must be conceived of as in some sense fulfilled, as one of

inclusion. My contention is that Professor Pringle-Pattison and those who agree with him have been too modest and exposed themselves unnecessarily to criticism such as that which Dean Rashdall has not been slow to bring against them, in admitting that such a relation goes beyond all analogies of experience. They would, I believe, have done better to have had the courage of their conviction and supported their theistic conclusion by claiming the power of self-inclusion in the life of the whole through unity of purpose, as of the very essence of spirit.

III. *By* F. C. S. SCHILLER.

THE truthseeker's safest and best method of approaching any philosophic question is assuredly to begin by asking what it means, in order that he may not be enmeshed in ambiguities and beguiled into investigating something that is intrinsically void of meaning; but when I remember the severe rebuke administered to Professor Alexander and myself at our last annual gathering for presuming to 'quarrel with our question,' I realize that even as the Kingdom of God can be entered only by little children, so admission to the sublime realm of metaphysics must be sought in the spirit of a schoolboy, who knows that he will get bad marks if he does not answer his questions as he is expected to do by those who set them. And yet presumably a schoolboy is (or ought to be) also a *learner*, and it seems to me that we all have much to learn in metaphysics. Now, we refuse to assume the learner's attitude when we assume that the problems of metaphysics have already been so completely explored that there can be a question only of determining *which* of the catalogued varieties is *the* true and final metaphysic. We refuse to assume the learner's attitude when we assume that the terms in which we put our questions are all clear, definite, and unambiguous, and so that our questions have a meaning and are susceptible of an answer. We refuse even to put ourselves into a posture in which learning is possible when we refuse to discuss with those who are raising a question what meanings they attach to its terms, and are content to proceed at cross purposes to crooked answers. To me it seems that this whole procedure should be reversed, if a discussion is to be profitable. Disputants should first of all be invited to come to terms, and to understand each other. After that it may be possible to formulate questions that have a determinate meaning and admit of a definite answer. After that, again, it may be possible

to enunciate a number of answers, and to determine which of them is the best. Until we do this, the terms of metaphysics will remain as obscure, the questions as ambiguous, the answers as vague and meaningless, and their discussion as unsatisfactory, as they are at present.

At the same time I must joyfully admit that the present discussion is in a large measure exceptional. The credit for this is primarily due to the Dean of Carlisle. Rivalling another famous Dean in his outspokenness, he has cleared away an enormous amount of philosophic fog, and traced it to its sources. I entirely agree with him that on the assumptions of common-sense one mind does not include another and that the terms of our question are, humanly speaking, nonsense. I entirely agree with him that the arguments for philosophic Absolutism are vitiated by the most tantalising vagueness and are devoid of all logical cogency. I am full of admiration for his candour, courage, and clearness, and of approval of his contentions, though I should hardly have ventured to indicate so bluntly that the whole mass of problems about the 'mind' of the Absolute has been generated by attempts on the part of philosophers to run with the hare and to hunt with the hounds, "to keep on good terms with the religious world which thinks of God as a Self and with that philosophical world which will have no God but the Absolute." This cap undoubtedly fits a great many philosophers, and it has ever been a cap of darkness.

Nevertheless, these philosophers are not alone to blame. The religious world has played straight into their hands, when they endeavoured to confuse the values of terms by affixing a religious label to the Absolute, which is properly speaking nothing but a technical term for the Whole. For the religious world had always exhibited a curious preference for leaving the meaning of certain terms vague and indeterminate, and even logically self-contradictory. This phenomenon is much too general and persistent to be ascribed to accident, and is maintained with far too much ingenuity to be set down to stupidity. It may be

suggested, therefore, that it is not really the intellectual defect it seems to be. The apparent intellectual defect may be only religious *camouflage*, only the paradoxical expression of a profound religious craving, which is not intellectual in its nature. It is easily traced to its real source when we consent to consider the psychology of religion. When we realise that religious conceptions are, in general, more or less disguised postulates, it becomes intelligible why some of them can only perform their religious functions by being left vague, and others by combining incompatible postulates in a manner that is logically indefensible but psychologically imperative. As an example of the former type we may adduce the belief in 'Heaven,' as one of the latter, that in 'God.' The religious conception of Heaven is left vague, partly because it is not easy to think it out in a manner wholly satisfactory to all the instincts that call for it, partly because serious and detailed concern with it would involve thoughts of death, from which the religious mind shrinks as much as the secular. Consequently a blank denial of immortality is not more shocking to the religious mind than a matter-of-fact elaboration of the idea, such as is not infrequently put forward by the spiritists. Similarly the religious sentiment does plainly postulate a 'God' who is *both* benevolent *and* omnipotent, though a child can see that these two postulates are logically incompatible. But it is felt that unless 'God' is benevolent, he will not be willing, unless he is omnipotent he may not be able, to grant his worshippers all that they desire. For they desire so much! So they demand benevolence and omnipotence. The logical incongruity does not matter psychologically; for the two demands are not made simultaneously or in the context of the same train of thought. Theology, of course, merely takes over, and formulates in technical language, these peremptory demands of the religious sentiment.

We must recognise then the existence of conceptions which are *essentially* self-contradictory, and the religious demand that

every soul shall be itself, and responsible for itself, and that yet God shall be "all in all," and all-inclusive, may be one of them.

Moreover, self-contradictory conceptions do not occur only in religion. Where would our sciences be if they had to abjure the use of *fictions*? The more ancient and respectable they are, the more prone are they to postulate the impossible and contradictory. The mathematician thinks nothing of inventing a symbol for an impossible operation, like $\sqrt{-1}$, or a *locus* for pooling his contradictions, like 'infinity'; and when he has done so, troubles himself no further with any logical protests. It has to be recognised also that self-contradictions are normal incidents in the development of scientific notions. For such notions have continually to assimilate new discoveries, which are often of considerable magnitude. They can do so only by continually transforming themselves and disavowing a past which nevertheless clings to their formulation. They are required to be elastic, and the process of stretching the old meaning over the new facts often puts an intolerable strain upon it. The new as it accrues always conflicts with the old, and ultimately contradicts it outright. But this does not matter scientifically. No one thinks the worse of an 'atom' because it has become a *divisible* 'indivisible.' If a scientist stopped to notice such an incongruity, he would only pooh-pooh it as a passing phase in the growth of his science. This is doubtless true of the particular instance, but does not alter the fact that there are always *some* conceptions which are in this self-contradictory condition.

Now the religious conceptions are so very instructive because they are so poignantly and permanently self-contradictory; they thereby yield a precious indication of the true nature of human conceptions. For when they are adequately probed, they never turn out to be the merely intellectual affairs they are superficially supposed to be; they can always be traced to a source in the aims and demands of our whole nature. They

formulate a human interest taken in the objects they refer to, and when this interest is cleft by conflicts and divided against itself, the conceptions which reflect it naturally become 'self-contradictory.' Hence, even when to a rationalistic logic they are foolishness, they can still be vehicles of a deep spiritual significance. I must conclude, therefore, that the confusion of God with the Absolute is not entirely due to the dishonesty of philosophers.

Nor am I entirely satisfied that the common-sense objection to including one mind in another is quite conclusive. It is, of course, roughly, borne out by the facts and by the notions we have framed on the basis of ordinary experience. But have we considered all the facts and framed notions which are adequate to deal with all of them? Until we can feel sure of this, it is hardly wise to deny dogmatically that one 'mind' (with a definition yet to be completed) can 'include' (in a sense as yet elastic) another (to an extent not yet determined). We have surely still far too much to learn about 'minds' and their construction, operation, and powers, to dogmatise thus. We do not know as yet where the limits of 'mind' are set in nature, nor do we know exhaustively what powers and means a particular mind may have of influencing another. What if there occur 'telepathic' transfer of contents from one mind to another? There is a respectable body of evidence that goes to show that this does occur. It has even suggested to so great a psychologist as William James the possibilities that minds may be subliminally in communication with each other, and even that individual minds may be separate only as a submerged mountain range may appear as a chain of islands above the surface of the sea. Now it is true that 'telepathic' is only a word that conveys no explanation of its *modus operandi*, and that the suggested universal 'reservoir,' in which all the individual streams of consciousness are to be pooled, is only a problem; but any success in using either notion might profoundly transform our present conception of 'mind.' Whether

we should be willing to call such a universal mind 'divine' would be a further question. To dub it 'God' would merely be to express faith in its positive value; but it might well prove to be the very devil.

Without going all these lengths, which will strike many as fantastic, and should only be entertained hypothetically, we may find ourselves seriously summoned to take account of empirical evidence which appears to illustrate quite definitely the inclusion of one mind by another, and to throw much light upon the process. I refer, of course, to some of the incidents in the 'dissociations' of personality, of which many cases have now been fully studied and recorded,* and to which I am glad to see Professor Muirhead also has referred. From these records we may gather, not only a definite idea of what is meant in the concrete by the including of one mind in another, but also abundant illustration of the varieties, degrees, operation, and consequences of this remarkable relation. Thus we find that 'Sally Beauchamp' had direct, immediate access to all that 'B. I' did, felt and thought, without in the least identifying herself with 'B. I' or confusing her experiences with her own. To 'B. IV' her relation was different; she was aware of what 'B. IV' did, felt and dreamt, but not what she *thought*, a fact which sometimes enabled the subtler mind of 'B. IV' to deceive 'Sally,' and to get the better of her. Moreover, these relations were not reciprocal, but were what is now called 'asymmetrical'; for both 'B. I' and 'B. IV,' the existence of 'Sally,' was inferential. In the 'Doris Fischer' case, at one time, the relations were still more complicated. (1) The primary personality, 'Real Doris,' who had suffered dissociation at the early age of three, had no direct cognizance of any of her associates, though thoughts of 'Margaret' might 'bubble up' into

* Cf. particularly, Sidis and Goodhart, *Multiple Personality*, Morton Prince, *The Dissociation of a Personality*, and W. F. Prince, *The Case of Doris Fischer* (in Vols. IX, X, XI of the *Proceedings* of the American Society for Psychical Research).

her mind. (2) 'Sick Doris' knew (or could know) all that entered the mind of 'Real Doris,' but had no access to the mind of (3) 'Margaret' (the equivalent of 'Sally' in the Beauchamp Case), who had full access to the minds of 'R.D.' and of 'S.D.' The most inclusive 'mind,' however, was that of (4) 'Sleeping Margaret,' who saw 'Margaret's' thoughts directly, those of 'S.D.' reflected *via* 'Margaret,' and those of 'R.D.' reflected from 'S.D.' *via* 'Margaret.'*

It would seem then that under these peculiar conditions of 'dissociation' one mind *can* include others. But this capacity does not guarantee to it any other superiority, nor tend as such to edification. The more inclusive mind does not thereby become the higher or better or wiser mind. Neither does it *ex officio* love the minds it includes. Both 'Sally' and 'Margaret' were distinctly childish minds that did not, and could not, understand the higher qualities of 'B. I' and 'Real Doris.' So far from loving, 'Sally' detested 'B. IV,' despised 'B. I,' and found her chief delight in tormenting both. Similarly, 'Margaret,' though at first she devoted herself to the instruction of 'Sick Doris' and to the concealment of her total ignorance of the life into which she had suddenly been launched at the age of 17, soon quarrelled with her, and treated her little better than 'Sally' did 'B. I.' It is true that 'Margaret' did *not* hate 'Real Doris,' and that the two halves of the 'Rev. Mr. Hanna' (before the fall and after) ardently desired to be re-united; but on the whole the indications are that when a mind 'dissociates' the resultant personalities will be on bad terms both with each other and with their including mind. Which no doubt would explain the state of the world on the theory that we are all 'dissociations' of the Absolute, but is not otherwise a particularly cheerful or elevating doctrine.

Mention must finally be made of the most normal and common, though least sensational, case of the inclusion of one

* Cf. my review of this case in *Proc. S. P. R.*, Pt. 74, p. 389.

mind by another; viz., that which occurs in the relations of the waking self to the dream-life. Whenever we 'remember a dream' we 'include' a dream self; whenever a dream rehearses forgotten memories, it 'includes' some contents of the waking self.

Altogether, then, it seems that there is empirical support for the contention that one mind may be capable of including others, though it must be confessed that we do not as yet understand how this is done nor know what the limits of the process are. On the other hand, the *religious value* of these phenomena seems extremely dubious, and whether any such including mind can properly be identified with '*the Divine Mind*' is another question altogether. On the whole, the evidence does *not* suggest that the including mind must be either one and the same for all, or worthy of the predicate 'divine.' But neither did the evidence suggest to any but those with a certain philosophic bias that the Absolute or cosmic whole *tout cru* was worthy of being deified: the natural inference is rather, as I suggested long ago,* that if all minds are comprehended in a Universal Mind as its dissociated personalities, this Absolute is *mad*. But as there is anyhow a good deal of madness to be included in the universe, this corollary might actually prove to be, theoretically, an advantage.

By allowing my comments on Dr. Rashdall's paper to carry me so far, I find I have left myself too little space to deal with Professor Muirhead's. But it seems to me to illustrate very well what was said above about the postulatory character of religious conceptions and the naturalness of 'contradictions' in a mind distracted by conflicting desires. In the great army of Absolutism Professor Muirhead evidently belongs neither to the band that professes open atheism, nor to those who annex

* Cf. *Studies in Humanism*, ch. xi.

the term 'God' and use it as a pseudonym for the Whole, but to the right wing that is genuinely puzzled to discover some reputable way of transferring the attributes of a Deity they cling to to the Whole they believe to be an intellectual necessity. This endeavour naturally leaves them exposed on both flanks. They have to make good their position on the one side against the antitheistic attacks of Messrs. Bradley and Bosanquet, and one is sorry to see that they still seem as unable to make headway against them as when Professor J. A. Stewart called attention to this weakness a good many years ago.* On the other side they have to maintain themselves against those who, whether or not they concede the validity of applying our notion of a whole to the real,† are at all events clear that the *ἐν καὶ πᾶν* can have neither religious nor moral value. But their severest struggle is evidently in their own minds, and with the contradictions and problems they engender. These difficulties would, of course, disappear if they would only abandon their philosophic ambitions, and be content with being merely religious and so with holding their beliefs as entirely 'matters of faith.' But as they claim to be philosophers who will not merge the logical standpoint in the psychological, it is impossible to help them, however much one sympathizes with their embarrassments. One can only watch their struggles to construct a coherent and intelligible conception of a Whole which is also worthy of being called 'God.'

For my part I should predict their failure in the future, as in the past. They are likely to fail at the very first step they have to take, viz., in constructing the notion of an 'infinite' mind. This step Professor Muirhead skips when he formulates

* Cf. *Mind*, XI, 369, No. 43. It is hardly possible to treat as serious expostulation the reference to the ambiguity of Hegel's use of *aufgehoben*. For though (as usual) Hegel was playing with words, and almost punning, there is no doubt that what he meant is what Mr. Bradley and Dr. Bosanquet have understood.

† To me it seems very disputable. Cf. *Proc. Aris. Soc.*, 1918, p. 253.

his problem of "making the relation between the infinite and the finite mind intelligible." For until the conception of infinite mind has been established, no question about its relation to finite minds can arise, and even then it will not follow that 'the' relation will be either single or simple.

I entirely agree, however, with Professor Muirhead that the 'analogies' by which this paradoxical relation is construed, all break down. The dramatic analogy, which makes history a (senseless) game the *Alῶν* plays with himself, regardless of the feelings of his pieces, is sufficiently answered by its Omarian statement, that we become

"But helpless Pieces of the Game He plays,
Upon this chequer-board of Nights and Days,
Hither and thither moves, and checks, and slays."

The trouble about it is not intellectual, but moral. For whereas

"The ball no question makes of Ayes and Noes,
But Here or There, as strikes the Player, goes,"

we emphatically *do*. We do want to know whither we are going, and what the game is for.

The inadequacy of the dissociation of personality analogy has been sufficiently discussed. The 'general will' analogy might do better service if it had been previously established that this hazy notion is not merely a metaphorical expression, either for the fact that the collective action of men differs in various but psychologically traceable respects from their individual action, or else for the political *camouflage* by which the ruled are beguiled into acquiescing in the acts of their rulers.

There remains, then, only Professor Muirhead's own suggestion that the conception of purpose may bridge the gulf between the human mind and the Absolute. He is aware that this too involves difficulties, and mentions one of them, but not the greatest and most fatal. Yet it is obvious that purpose in a human mind is relative to its so-called 'finiteness.' A purpose implies a future, an end yet-to-be-attained, and a will

to use the necessary means. Why are means necessary? Because of the defect of its power. Like all reasoning in the relation of means to ends, purpose presupposes a process of achieving and a limitation of the mind that entertains it. Purposes can only exist in minds that *cannot* achieve their ends by a mere *fiat*, and have to contemplate the fulfilment of their desires as ideals to be realised, before transforming them into actual facts.

How, then, is it possible to attach any meaning to the notion of purpose in the unlimited operations of a universal mind? Let us grant Professor Muirhead his first step, that a mind can be conceived which can intelligibly be denominated 'universal.' That will not enable him to take his second step and to prove that such a mind can share a common meaning with all other minds. For if we ask what such phrases really mean, and discriminate between a *claim* to a 'common' meaning and a real assurance that it exists, we shall speedily find that what we need is a specific ground for the belief that a meaning has been effectively communicated and is really common. Such a ground is to be found only in the acts that ensue upon the communication. The way to show that we understand what was meant when asked to shut the door, is to get up and shut it; the only convincing proof that we see a 'common' red is to agree with others in arranging colours. But where are the acts that prove to us that the Universal Mind understands our meanings, or conversely?

The most impossible step, however, is the third. What purpose is it humanly possible to attribute to the Universal Mind? Is it to have unachieved ends in a distant future? Is it to be limited in the choice of its means, so that it can display intelligence in our eyes by conforming its procedure to ours (*cf. Proc. Aris. Soc.*, 1918, pp. 262-3)? Is it perchance to 'direct' the process and to develop the meanings of finite minds, and so to fall into process itself?

Surely the only 'purpose' that could conceivably be

ascribed to it would be that of *in suo esse perseverare*. For this would need no *future* achievement and need not imply any limitation in the self-satisfied mind that aims at only this. The only 'end,' 'purpose,' or 'will' we can attribute to the Absolute is that of preserving its identity, and being what it is to all eternity.

But it is clear that this utterly breaks down the analogy with 'finite' mind. Such is not the nature of any human end or purpose. Our ends are not all eternally achieved. And so, if the Universal Mind is such as to inhabit a *Nunc Stans*, and if the only 'end' it is after is the preservation of what is, I for one cannot approve of it, or accept it as a common end for me to share in. For it would be a blank negation of all hope of progress or betterment, an inhuman stereotyping of all the evils and errors that exist. Morally speaking, there is nothing I can have in common with such an Absolute. I cannot swallow it, and if it absorbs me, it will have to digest an unmitigated contradiction. I do not say, of course, that it cannot do so, for with such a 'God' anything is possible, and there is every reason to anticipate the worst.

Neither do I deny that such an attitude of moral protest may be vain, and crassly philistine, and unworthy of a truly enlightened rationalism which has soared far above "the red mist of doing" and the crudities of the moral judgment. It may even be irreligious, if it be *de rigueur* to construe quite prosaically the metaphors of devotion and ecstasy. But, if so, I am tempted to retort that the self-surrender of the absolutist to his deity is not perhaps quite so innocent of self-interest as it looks. It emphasises one side only of the transaction. But when we look at the other, it will be seen to be a shrewd bargain redolent of canniness or self-conceit. For does it not mean *self-deification* on its other side, and require the Universal Mind to identify itself with Tom, Dick, and Harry? And one can well imagine that even though there be a Universal Mind capable of absorbing Tom, Dick, and Harry, it

might find them anything but palatable. I should conclude, therefore, that if a tithe of the ingenuity which has been bestowed upon the deifying of the Whole had been devoted to exploring the possibilities of a divine intelligence more in accord with human nature, philosophic inquiry might have attained results far more considerable and satisfactory.

IV. *By* C. F. D'ARCY, Bishop of Down.

As one who is prepared to give an affirmative answer to the question which is the theme of our discussion, I have the singular advantage of having before me the arguments of two very powerful and persuasive critics on the negative side. In philosophy, as in most other things, it is always easier to be destructive than constructive, to attack than to defend. It was therefore a nice judgment which allowed the disputants on the positive side in this controversy to know the main lines of their opponents' assault. It was also a generous arrangement, for which we have reason to be grateful.

May I say that I should have welcomed a more detailed examination of the meaning of the word "include"? It is full of ambiguities.

(1) It has a spatial or material sense. The largest of a set of Chinese boxes includes all the rest. It is not in this sense that the mind of God can be said to include individual minds. Yet it is well to be clear on this point, because philosophers and psychologists have a habit of using spatial, or material, metaphors with great and dangerous freedom. Thereby they gain an illusive and misleading clearness. The late William James was sometimes misled by his pictorial imagination.

(2) The word "include" can be used in a logical sense. A more general notion includes a number of less general notions. A genus includes many species. A species includes many individuals. Here the abstract includes the concrete. It seems to me very important to define this meaning. There are forms of Hegelianism which give an affirmative answer to our question, because they identify God with the universal idea. T. H. Green seems to have been sometimes misled in this way. Some of his language seems to reduce God

to an abstract principle of unity. I do not think that Hegel himself ever really faced this problem. He seems to me to vary, sometimes endeavouring to grasp the concrete, and sometimes falling back on the easy inclusiveness of abstraction.

(3) It is possible to speak of a self including its experience. Or perhaps it would make for clearness if we said that *experience includes all the elements into which it can be differentiated*. The experience of a self is certainly possessed of a peculiar unity. It is a whole. It is concrete, not abstract. It can be differentiated by processes which can be variously described by such terms as *attention, abstraction, thought, purpose*. Any particular instance of mental activity will be found to contain all these processes in varying degrees. The particular thing, idea, or object, which is thus presented, is always a part of experience, taking its place in the whole, and linked up by innumerable relations with all other elements in experience. Thus, the experience of a self includes an indefinite multitude of things, ideas, wishes, aims, etc. Each one of these, as presented in consciousness, is an object; so that we may say that the experience of the self includes all its objects. Here the concrete includes the abstract.

If we are to think of God including human minds, we must surely begin our investigation from this third sense of the word. God cannot be another name for infinite space, nor can He be an abstract formula. He must be, at least, a self with experience. And here we come up sharp against the objection which I take to be Dean Rashdall's central criticism. If God is a self and all other minds are included within His experience, then these other minds must be, in relation to Him, *objects, not subjects*. But, as Dean Rashdall points out, "The essence of a mind is what it is for itself, not what it is for another. The essence of a mind is not to be known, but to know, to will, to feel—in a word, to be conscious." This criticism seems to me to be thoroughly sound. If God be but one self among many, He cannot, it would seem to me, be all-inclusive in

relation to the multitude of human selves. The arguments from telepathy and mental dissociation seem to me to prove nothing. Even if it be true that the whole or part of the content of one mind can be shared by another, the for-itselfness, which is the essence of selfhood, is incommunicable. Here, again, Dean Rashdall's argument seems to me unanswerable. But it has not been proved that the content of any mind, as qualified by its own peculiar point of view, can be shared by another mind. The very disagreement between the dissociated selves in the abnormal cases referred to by Dr. Schiller is an indication of this.

It is my complete agreement with Dean Rashdall in this contention that forces me to accept Mr. Bradley's doctrine that the self does not supply us with a satisfying account of the nature of the Absolute, while dissenting emphatically from his further doctrine that the individual self with all its peculiar experiences is merged, transmuted, lost, in a single relationless immediacy. In regard to this last conclusion, the criticisms of Dean Rashdall and Professor Pringle-Pattison seem unanswerable.

Let me now venture to set forth briefly the reasons which seem to me to prove the necessity of believing in the all-inclusiveness of God. The argument consists in a careful feeling of the way upward from the lower levels of experience to the higher. I ask you to follow a lowly path. Nor do I profess to reach a conclusion which cannot be criticised. Like all conclusions arrived at on probable grounds it will be open to the charge that it involves contradictions. Dr. Schiller has pointed out with great clearness that science is never afraid of contradictions, because she is well aware that all her conclusions are provisional. "Self-contradictions," as he says, "are normal incidents in the development of scientific notions. For such notions have continually to assimilate new discoveries." He is quite right; but why does he refuse to the gropings of theology the freedom he claims for the gropings of science? Philosophy

is really in a better position than science in this respect, because she can more frequently show how the contradictions arise.

What we have to consider first is the relation between self and the world. The material world, as I know it, is a portion of my experience. Or put it thus—All of the material world, so far as it is known to me, is a portion of my experience. It is included within that sphere of knowledge and effort which I call my experience, and which, from my point of view, is myself. I do not think that the new realists have done anything to overthrow this position. All they have done is to call mind awareness, and to transfer the activities of thought and effort to the world of which mind is aware, which still remains a whole constituted by these activities. And M. Bergson, who is commonly supposed to be a realist, has done more than anyone else to show that we think and make our world to suit our practical needs. It would seem to me that the new realism is only a complicated way of getting to the position of the old idealism.

We have then self including the world of its experience. But there is a multitude of selves, each including the world of its own distinctive experience. And there is a great universe of things in space which, somehow or other, integrates all the spatial worlds included in all experiences. Or, to put it in the language of common sense, we all know, each in his own partial way, the same great material universe. That is the fundamental fact which must form the basis of every possible doctrine.

Now, if I understand Dean Rashdall and those who agree with him aright, they are prepared, on the analogy of human experience, to argue from the material universe to the existence of God. They conclude that, because our minds are organic to experience, and therefore to nature, and because nature at the same time passes beyond all human experiences, a great world-positing mind must exist. But why do they stop

there? What is the relation between that great world-positing mind and our minds? Surely there must be some interpretation of the fact that our knowledge of the material universe is the partial knowledge of an experience greater than our own. How is it that the experience of God integrates all our experiences? Green used to explain it by saying that an eternally complete consciousness realises itself gradually and with interruptions in our consciousness. That will not satisfy us now. But we must have some explanation of a fact so fundamental.

One thing is surely quite clear. There must be some organic relationship between the world-consciousness and the human consciousness. God and the multitude of human minds cannot form a mere collection of separate disconnected monads. It seems to me that, in Dean Rashdall's thought, they are nothing more than this. But that is impossible, for, on the material side, the relationship of the corresponding worlds of experience is a unification so complete that it is hard to distinguish it from identity. There must, therefore, be in God, not only a world-positing self, but a principle which brings into unity the seemingly disconnected multiplicity of the spiritual world. This means that self-hood, while true as a description of the nature of God, so far as we can see, is not sufficient. There must be a principle of unity which overcomes the oppositions between selves and creates a final unification.

If this be correct, it would seem that to describe God in terms of self-hood, or personality, is insufficient. He is personal and something more. Here we seem to be driven back to Mr. Bradley's Absolute, or something very like it. But must we suppose that, in the final unification, all the personal distinctions which mark the world of our experience are absorbed and lost? Does pain cease to be pain? Are good and evil merged and transmuted? Here is where, it seems to me, Mr. Bradley has allowed his metaphysics to obscure the teaching of experience. If we keep close to experience, we shall find that we are led to a very different

conclusion. The basis of all our reasonings is the relation between the mind and its experience of the world. The mind, or self, in its experience of the material universe, acts the part of a unifier. The unity of the self is the unity of experience, and this is the unity of all that we know. But does this unification deprive the individual thing within the world of our experience of its proper quality? We know that it does not. On the contrary, it is the relations which each thing bears to everything else which constitutes its peculiar nature and gives it its character: and these relations are parts of the system contained within, and sustained by, the whole unity of experience. So far then as our experience extends, the unification of a multiplicity does not involve the absorption of the peculiar quality of each element. On the contrary, it insures the preservation of that quality. Now as mind unifies the multiplicity of the material world, so does God unify the multiplicity of the spiritual world. And, as in the former case, unification involves the securing to each element of its proper nature, so surely we must expect that the unification of the spiritual world in God involves the securing to every individual self of its own peculiar character. That is the teaching of analogy; and we have no other guide.

There are three stages of reality under our review:—
(1.) The material universe. (2.) The principle of self-hood.
(3.) God—the ultimate unity and unifier.

The first and second of these we know, and the relation between them. The third, in its final nature, we do not know; but from the relation between the first and second, we can form a judgment as to the relation, in certain respects, between the second and the third. Our knowledge in this latter case can never be complete, but it can be sufficient to satisfy us as to the security of the foundations of our life.

So far, we have considered this subject mainly from the side of knowledge. It is specially interesting to consider it from the side of will. Let us take the three stages of reality just

mentioned: the material world, the self, God. The more fully the material world is examined, the more completely does it resolve itself into a system of necessary causes and effects. There is no place left for freedom, or, shall we say, spontaneity. The appearance is presented of a great universal order in which everything is settled beforehand. Thinkers who have become absorbed in this way of regarding the world come to believe in a doctrine of universal mechanical determinism. Mind comes to be regarded as an epiphenomenon, a meaningless phosphorescence playing over the surface of an iron necessity.

Practical experience, however, shows us man controlling natural forces for his own purposes. Moreover, it is the uniformity of natural law which gives man his power over natural forces. If these forces worked capriciously, it would be impossible to count upon their producing any desired effect. The more science extends the area of natural necessity, the more complete becomes man's power to subordinate nature to his will. In fact, the necessary sequence of physical cause and effect is the essential and appropriate instrument of freedom. Here we have a singular illustration of the dominance of the practical, and of the misleading character of a philosophy based exclusively on a speculative foundation. I hope I carry Dr. Schiller with me in this contention.

The only possible interpretation of the fact I have just set before you seems to me to be this: the material world within which necessity reigns is an abstract world. It is isolated from the rest of experience by a process of abstraction, and when so isolated and defined is found to be a coherent whole, just as the still more abstract world of geometry is isolated and found to be a coherent whole. The wider spiritual world includes therefore within itself these narrower worlds. But the elements in these narrower worlds do not become lost or absorbed in the greater world. On the contrary, they persist, maintaining always their own peculiar character, and just because they do so,

contributing to the full and proper life of the larger world in which they are included.

Now, suppose it be true that there is a higher spiritual life in which all human minds are included, we must surely be guided by this analogy and believe that, in that higher life, every human mind retains its own peculiar individuality and character. Further, I hold that we must postulate such a higher spiritual life, because there is no other way of reconciling two facts that we know to be true: (1) the incompleteness with which each individual human mind grasps the physical world in its dealing with the practical problems of its life, and (2) the common use of the physical world in which we all share.

If this be a correct inference, it is clear that the higher spiritual life cannot be completely defined in terms of personality or self-hood. But we know no principle higher than personality; and therefore it will be said the argument is an effort to explain the known by the unknown. This is an obvious objection. But it is founded on a misapprehension. The argument I have ventured to place before you is based on analogy. It advances from the known relation of the material and the spiritual, as lower and higher in the scale of being, to the relation of the spiritual as it is in us and the spiritual as it must exist in the whole. The argument may be compared with that by which physicists arrived at the doctrine of the ether. Finding it necessary to suppose the existence of some medium more universal than matter and not manifesting itself in the ways characteristic of matter, they used the material analogy as far as they could, and corrected it where it failed to correspond with the facts. So for us, contemplating the necessity of some supreme, all-embracing, unity, it cannot be illegitimate to use the idea of self-hood, or personality, as far as it will go, and, where it fails, fall back on the idea of a universal concrete unification.

May I say that I agree fully with Dr. Schiller that the

Absolute is "properly speaking nothing but a technical name for the Whole." But it makes all the difference in the world how we conceive the whole. If we think of the whole in terms of crude physics, as a mere collection of things in time and space, the Absolute can certainly have no religious value. Or if we conceive it in pluralistic terms, as a multitude of selves with or without an independent physical environment, the Absolute as such will not stir religious emotions. These emotions, if they exist, will attach themselves to the idea of one self supreme among the rest, or perhaps a group of selves, conceived as eminently mighty, good, or worthy of devotion.

It is here worth our consideration that Dr. McTaggart has presented the idea of the Absolute as a system of selves, and has apparently found in this conception religious value of a very high order. It is a phase of thought curiously characteristic of our time; for it may be called a democratic conception of the Absolute. Most interesting, however, is it to observe that Dr. McTaggart secures the religious value of his doctrine by insisting on the unity which is involved in the fact that the selves form a system. While the whole or the Absolute is conceived as a mere collection of things, or of persons and things, or of persons only, it has no religious value. But the moment there comes the conception of a universal unity, a spiritual whole in which every life has a sphere and function, religious value arises. If we believe in God as the all-inclusive life of the universe, and as in this sense the Absolute, or the Whole, we attain a conception which has proved itself, in the many forms in which it has been expressed, whether in theology, in mysticism, or in poetry, to possess the highest possible religious value.

Professor Muirhead rests his contention for the affirmative side in our discussion on the sharing of meaning and purpose which is possible to selves. I have no doubt he is right in considering that here we have an indication of the existence of a universal mind. But it seems to me a mistake to suppose

that it would help us at all, were we able to prove that selves interpenetrate one another. It would certainly not prove that they are included in the mind of God. For, if it belonged to the nature of a self to include all other selves, the Absolute would be already given in every experience. There would be either no God at all, or the human self would be the only possible God. It is the very multiplicity of the spiritual world which forces us to believe in a uniting principle higher than that of the individual self. Dean Rashdall holds that the contents of consciousness are for every self unique and incommunicable. While not accepting language which seems to imply that consciousness is divided up into distinct and isolated moments, I agree with him that, as between one human self and another, the concrete contents of each mind are its own exclusive possession. Only abstract elements, such as meanings and purposes, can be conveyed from one to another. But it is this very human limitation which forces us to seek the final unification in God. And it is just here that the religious value of the all-inclusiveness of God appears. The religious mind always thinks of God as knowing the secrets of every heart. And, as to the instance of pain, which Dean Rashdall thinks so conclusive, we have surely had sufficient evidence in the course of recent events that the only conception of God for which suffering humanity has any use is that which presents Him as sharing in all human sufferings.

I am anxious to make it clear that in all that I have said hitherto I have carefully avoided all such conceptions as "Infinite Mind," "Omnipotence," "Nunc Stans," and so on. The whole argument rests on the limitations of self-hood as it exists in us, the necessity of believing in a higher unification, and the analogy from the relation of the material world, and the self to the relation of the self and the higher unity. This is not a metaphysical argument in the old sense at all. But I feel justified in falling back on metaphysics in the full sense of the term, and pressing an argument which seems to me really

unanswerable when once the spiritual view of reality is admitted. In a spiritual world the whole is prior to the parts in the order of being. William James and others may have thrown stones in a highly entertaining fashion at this doctrine, but they never succeeded in overthrowing it. The order of becoming is one thing, the order of being is another. If a meaning or a purpose is being worked out by slow degrees, the full reality of the whole is to be found, not in any stage of the process, but in its completion. Isolate any individual experience and suppose it complete—which in practice it never is—and the full reality, the whole, is the self. The full reality, the whole, of the universe cannot then be a plurality; it cannot be a collection of things or selves; it must be an all-inclusive unity. Nor can this all-inclusive unity be a mere individual self, because the individual self is always one among many: for no individual experience is, or can be, a complete self-sufficing whole. It will be evident that this doctrine is but the old *a priori* proof of the being of God turning up once again. It is what Hegel expressed in his own curious fashion in a famous passage. And it is hard to see how it can be controverted, if it is once admitted that the texture of experience is spiritual, not material.

In view of recent criticisms of the "idealist" position, may I add that I accept, in the most exact and literal sense, the statement, said to be the basis of modern realism, that "the knower is everywhere in direct relation with his object." It is the real world that we know, not our own "ideas." This seems to me the very essence of all true idealism. But I am quite content to adopt Professor Pringle-Pattison's language, and say that mind is organic to the world, and the world organic to mind. Yet surely this must include the primary and secondary as well as the tertiary qualities.

IV.—SYMPOSIUM: IS THERE “KNOWLEDGE BY ACQUAINTANCE”?

By G. DAWES HICKS, G. E. MOORE, BEATRICE EDGELL, and
C. D. BROAD.

I. By G. DAWES HICKS.

“THERE seem to me,” writes Mr. Russell, “to be two main cognitive relations with which a theory of knowledge has to deal, namely *presentation* (which is the same as what I call *acquaintance*) and *judgment*. These I regard as radically distinguished by the fact that presentation (or acquaintance) is a two-term relation of a subject to a single (simple or complex) object, while judgment is a multiple relation of a subject to several objects.” He then goes on to emphasise a further distinction. “Among judgments, some are of the form ‘the entity which has the property ϕ has the property ψ ’; and we can sometimes make such judgments in cases where we have no presentation whose object is that particular entity x which has the property ϕ . In such cases I say we have ‘knowledge by description’ of the entity which has the property ϕ ” (*Mind*, N.S., vol. xxii, 1913, p. 76). It is no doubt the distinction between “acquaintance” and “description” upon which Mr. Russell himself is mainly concerned to lay stress. But in this discussion I wish to concentrate attention upon the prior distinction between “acquaintance” and “judgment,” which is, from certain points of view, the more fundamental.

The antithesis between sense and thought has had a long history, and Mr. Russell might claim that he is, to a large extent, following the path of a well-established tradition. He departs, however, from that tradition in two very important respects. In the first place, he does not make the distinction turn upon an assumed difference between receptivity and

spontaneity on the part of the subject ; being acquainted with a datum is, in his view, essentially an "act," whatever the nature of that "act" may be. And in the second place, "acquaintance" is not confined by him to sense-data. We have, he contends, "acquaintance" by introspection with what goes on in our own minds,—thoughts, feelings, desires, etc.; we have "acquaintance" in memory with things that have been data either of sense or of introspection ; and, more important still, we have "acquaintance" with certain universals, such as sensible qualities, space-relations, time-relations, and relations of similarity and difference.

If the antithesis be justified, there can be no question of its radical character. It would constitute an absolute difference between two kinds of knowing ; and, however dependent the second might be on the first, each would be an essentially unique and separate mode of mental activity. With regard to "acquaintance," since it is a two-term relation, the "dualism" of truth and error cannot arise ; "acquaintance" itself cannot be deceptive, "the object of a presentation is what it is, and there is an end of the matter,—to say that 'it appears different from what it is' can only mean that we make false judgments about it." With regard to judgment, since it is a multiple relation, a "dualism" does arise. We may believe what is false as well as what is true, for although the several objects of the judgment cannot be illusory, they may not be related as in judging we conceive them to be.

A.

Perhaps if I take up at once the question of the alleged immunity of "acquaintance" from mistake or falsehood, I shall best be plunged *in medias res*, and raise at least one of the issues that seem to be involved. When it is maintained, with reference to a so-called "sense-datum," that I may know or not know it, but that there is no positive state of mind which can be described as erroneous knowledge of it, so long as I confine myself to

"knowledge by acquaintance," it can scarcely be intended to assert no more than the truism that if I am aware of something I am aware of it. No doubt, if I am aware of a red colour, I am aware of it, and there is an end of the matter. And from many expressions that are employed one would, I think, naturally conclude that such was what was meant. But if this were, indeed, the meaning, it would be hard to see where the contrast with "judgment" is supposed to lie. For it is equally the case that if Othello believes that Desdemona loves Cassio, he does believe it, and there is also an end of the matter; there is so far in regard to the act of judging or believing no question of truth or error. In both cases there is a relation between what I should call the act of being aware and the content of that act. *This* relation is, however, quite different from the relation which subsists between the mind and what, rightly or wrongly, is described as "something other than the mind." I do not, therefore, imagine that when, for example, it is said that "I cannot possibly see a thing to be a sheep, unless it is one," no more is meant than that when I am (through means of vision) aware of a sheep I am aware of one. I take it that what is meant is that in the relation of seeing simply (that is, apart from any judgment), the object seen, which is independent of the seeing, must be what I am conscious of it as being. If I pronounce an animal which I see at a distance to be a sheep when in fact it is a pig, the mistake, it would be contended, is due to a judgment superinduced upon the dual relation of referent and relatum, the relation of acquaintance, and had I confined myself to the mere seeing, the mistake would not have arisen. And I understand it is further implied that the "awareness" may not be a characteristic of what I have called the act of apprehending, but may be the whole complex which has for its constituents referent, relatum, and relation. So regarded, "givenness" and "awareness" are apparently held to be but two aspects of one and the same fact,—the fact, namely, which consists in the referent having a certain relation to the relatum.

But if the meaning be that just indicated, a contention, which is sometimes advanced, must, I think, be disallowed. It is sometimes contended that what is thus primarily meant by "acquaintance" is a relation with which we are all perfectly familiar, and with regard to which no one wishes to dispute that it is a relation which does sometimes hold between things. The ordinary view, undoubtedly, is that "awareness" is a characteristic of the referent, and whoever shares the ordinary view is surely entitled to insist that the relation (say) of the awareness of a patch of red to the referent is a totally different relation from that of the patch of red to the referent. The result, it seems to me, of taking an "awareness" to be possibly a complex consisting of the constituents I have mentioned is that the referent is assumed to stand to the patch of red in just that immediacy of relation in which, according to the other view, he stands to the awareness of the patch of red. And the first point I would press is that whether there is or is not "acquaintance" of this sort with sense-data, or any other entities, the fact, if fact it be, is not, at any rate, so self-evident as to be beyond the range of controversy. For I suggest that under cover of the one term "acquaintance" there have been confused two very different kinds of relation,—namely, the sort of relation which a subject may have *to an object* and the sort of relation which that subject has *to its awareness of an object*.

Far from being self-evident, I agree with Miss Edgell, that as between subject and object a simple cognitive acquaintance of the kind intended is not a fact really to be found at all (*Mind*, N.S., xxvii, 1918, p. 182). Mr. Russell has left us in no doubt as to what he primarily means by "acquaintance." He has stated his meaning quite explicitly and unambiguously. "I say," he writes, "that I am *acquainted* with an object when I have a direct cognitive relation to that object, *i.e.*, when I am directly aware of the object itself" (*Mysticism and Logic*, p. 209). And he explains that by "cognitive relation" he does not mean the sort of relation which constitutes judgment, but the sort of

relation which constitutes presentation. In other words, he means by "acquaintance" (*a*) a relation between subject and object, and (*b*) a relation specifically characterised as "direct," that is to say, of such a kind as that when in that relation, and in that relation only, to an object, the subject cannot be deceived as to the nature of what is before it. Now, in replying to the question proposed for our discussion in the negative, I am committing myself to denying that a subject ever does have *to an object* the kind of relation which it is here asserted it constantly may have. I am not denying either (*a*) that the subject has this kind of relation to what I have called its awareness of an object, or (*b*), so far as I can see, any relation with which we can all be legitimately said to be familiar, and with regard to which there can be no dispute.

B.

I will return to the line of reflection I have just been following. But, before pursuing it further, it may conduce to clearness if I try to bring out what, in another respect, my negative answer does not imply.

I am thinking, namely, of the distinction between "acquaintance with" and "knowledge about" as it was originally formulated by John Grote. Grote took considerable pains to make manifest that the "immediateness" which, with regard to the former, he had in view was an "immediateness" which is "a supposition only," and which is never, as a matter of fact, to be found in actual experience. Pure "immediateness" of relation to an object on the part of a subject was, as he conceived it, a theoretical terminus towards which, in retracing the steps along which cognition has advanced, we seem to be driven, but which, if it could be reached, would indicate the stage at which cognition itself had ceased to be a fact. "Knowledge begins," he urged, "when reflection begins, and no earlier, for in immediateness it is dormant." "Immediateness is confusion or chaos, which reflection begins to crystallise or organise"

(*Exploratio Philosophica*, ii, p. 201 *sqq.*). It is true that "reflection" is an unfortunate word to employ in this context; but what I take to be intended is that the further back we proceed in the history of cognitive experience, the fewer will be the characteristics of the object that are discriminated, until at length we should arrive at a mere juxtaposition of two entities that would not be a cognitive relation at all. And, in similar manner, William James, referring to Grote's work, lays stress upon a like consideration.* Now, discounting meanwhile the woeful ambiguity of the term "immediate" as used in this reference, I feel no hesitation in recognising the importance of the distinction to which these writers were directing attention. But it is obvious, I think, that they meant by "acquaintance" something very different from what Mr. Russell means by it; and, in emphasising the relative character of the distinction, as they conceived it, they were, it seems to me, proceeding on sound psychological principles.

Let me dwell, for a moment, on the last point. I realise, of course, the awkwardness of saying, as many psychologists have felt themselves constrained to say, that judgment is involved from the outset in cognitive apprehension, that even the simplest cognitive state is in reality a state of judging. For unquestionably the term "judgment," as ordinarily understood, expresses a highly reflective act, which depends for its exercise upon a definite recognition of the distinction between the subjective and the objective, such as no one supposes the primitive mind to be capable of. The difficulty here is, however, purely a verbal difficulty, and to throw it in the way is simply

* *Principles of Psychology*, vol. i, p. 221. "The same thought of a thing may," James says, "be called knowledge about it in comparison with a simpler thought, or acquaintance with it in comparison with a thought of it that is more articulate and expressive still." And he points out that "the less we analyse a thing, and the fewer of its relations we perceive, the less we know about it, and the more our familiarity with it is of the acquaintance type."

to obscure the issue. What one is concerned to maintain is that the functions of discriminating, comparing and relating, which no one doubts are fundamental in every developed act of judgment, must be involved, though it goes without saying in an extremely rudimentary form, in even the vaguest, crudest awareness of any content whatsoever, and that a bare acceptance of what is presented, merely because it is presented, would not constitute awareness or recognition in any sense that has ever been attached to those words. Such bare acceptance of what is presented is, however, I take it, precisely what Mr. Russell does mean by "acquaintance with" an object—a state of mind in which a colour, for example, can be "perfectly and completely" known, just as it is, apart from any distinction of it from other colours, apart from any comparison of it with its surroundings, apart from any relation in which it may stand to that of which it is usually said to be a property, etc. (Cf., e.g., *Problems of Philosophy*, p. 73.) Assume, then, a faculty of that description, and how are you going to account for the emergence of what, in contradistinction therefrom, you agree to call specifically thought or judgment? One of three possible answers might be given. It might be said either that the capacity of judging is present along with that of "acquaintance" at the very commencement of mental history, or that it is introduced *ex abrupto* at some subsequent stage of that history, or that it is a development from the condition of "acquaintance." To fall back on the second of these alternatives would be tantamount, so far as I can see, to relinquishing any attempt at psychological explanation. For I am unable to admit as even an intelligible theory the notion that ideas of relation spring up *de novo*, whenever data, *already* apprehended with definiteness and precision of outline, come to be distinguished from and compared with one another. It seems to me as certain as anything in psychology can be certain that the data in question only come to be for the subject definite and marked off from one another *through the exercise*

of an activity which is in essence similar to that whose mode of origin we are inquiring about. The first alternative, if it be understood to imply that the faculty of judging, as we are familiar with it, is a primordial equipment of the mental life, is surely too extravagant an expedient to call for refutation. If, on the other hand, it be understood to imply that the elementary operations of differentiating and comparing are present from the start, alongside of the passive attitude of mere "acquaintance," then how these could coexist in a primitive mental life independently of one another would, I think, baffle all attempts to render comprehensible. You would be driven, if I mistake not, to have recourse, in the long run, to the third alternative. But I submit that from the attitude of "acquaintance," in Mr. Russell's sense of the term, to that of believing or judging, in his sense of these terms, there is no road. "Acquaintance" is "knowledge of things," and, as such, is sharply contrasted with "knowledge of truths." The "things," however, with which each individual subject is "acquainted" belong to that individual subject's "private world." Belief or judgment, on the other hand, involves that in some way that private world has been transcended, and that the individual judging is able to contrast the "things" of his private world with "facts" of an altogether different order—facts which "do not (except in exceptional cases) in any way involve the mind of the person who has the belief." (*Ibid.* p. 203.) Mr. Russell speaks of "knowledge by description" as that which "enables us to pass beyond the limits of our private experience." (*Ibid.* p. 92.) In truth, however, any "knowledge about," any judgment, implies that the subject judging has already passed beyond the limits of his private experience. The "fact" with which a belief or judgment must "correspond" in order to be true, or with which it fails to correspond if it be false, is not "fact" of a kind with which "acquaintance," in Mr. Russell's sense of the term, is possible. And my contention is that for a primitive conscious subject, whose knowledge was confined to "acquaintance," as

thus understood, every avenue of transition to a recognition of "fact" beyond the limits of private experience would be closed. From the "immediate data of sensation" a departure must, however, somehow be made, if there is to be an advance to "knowledge about"; and, although we are told that the first departure "was probably made by our savage ancestors in some very remote prehistoric epoch," no hint is vouchsafed as to how this "piece of audacious metaphysical theorising" is conceivable on the basis of simple "acquaintance." (Cf. *Knowledge of the External World*, p. 102.)

C.

I should like next to refer to certain features in the working out of the notion here in question of "acquaintance" that seem to confirm the objections I have been pressing against it:—

(a) Mr. Russell insists, with a good deal of emphasis, upon the importance of differentiating between data that are "epistemologically primitive" and data that are "psychologically primitive." "When I speak of 'data,'" he writes, "I am not thinking of those objects which constitute data to children or monkeys: I am thinking of the objects which seem data to a trained scientific observer" (*Journal of Philosophy*, xvi, 1919, p. 7). That is to say, a "sense-datum" turns out to be an extract obtained by analysis of our highly developed experience. Selecting some object of ordinary perception, we may proceed to single out its various constituents and qualities; and, broadly, each distinct kind of quality would, I suppose, be correlated with a distinct mode of organic stimulation. But confessedly there is no justification for taking the result of such an analysis to be an enumeration of items originally "given" to the mind. If, then, the skilled observer treats them as his "data," he is obviously not entitled to conclude that, even in his experience, knowledge of them has come about through mere "acquaint-

ance," for the very analysis he has been performing in order to get at them in their assumed simplicity is itself evidence to the contrary. The analysis itself is sufficient to indicate that the complex from which they have been extracted was not known by "acquaintance," and one tries in vain to discover why it should be thought that these ingredients of the complex are known in any other way than those which are dismissed as not "data."

(b) Particularly in sight and hearing, "the sense-datum with which I am acquainted is," Mr. Russell allows, "generally, if not always, complex." A visible object, for example, contains parts spatially related to one another, and with spatial relations we can be immediately acquainted (*Mysticism and Logic*, pp. 210-211). And, while there is, it is urged, no ground for refusing to admit the possibility of our being aware of a complex without our being aware of its constituents, it is assumed that in being "acquainted with" a complex we *may* be "acquainted with" its constituents and the spatial relations subsisting between them. The question I would press is this. When I am "acquainted with" one part of a complex as being to the left (say) of another part, what is it that constitutes the difference between such "acquaintance" and the judgment that the part B is to the left of part A? The only answer one appears to be able to get is such as may be obtained from the statement that in the latter there is "the relation of believing or judging which relates a mind to several things other than itself" (*Problems of Philosophy*, p. 179). But, in being "acquainted with" these parts and the relation between them, the mind is already related to several things other than itself, and one fails to see the grounds for calling the relation of the mind to the complex "B—to the left of—A" a dual relation from which the relation of the mind to all of the terms together in the judgment "B is to the left of A" requires to be distinguished as a multiple relation. Where, in such a case, is the line to be drawn between "acquaintance with" and "knowledge about"?

(c) Similar perplexities confront us, it seems to me, in the account that is offered of the alleged knowledge by "acquaintance" of universals other than relations. It is "obvious," we are told, that we are "acquainted with" such universals as white, red, black, sweet, sour, loud, hard, etc.,—that is to say, with the qualities exemplified in sense-data; but that this should appear to anyone obvious is just one of the perplexing things to which I refer. For it is not meant apparently that "acquaintance with" (say) a particular white patch includes "acquaintance with" the universal whiteness, nor yet that the "sensible quality" whiteness, with which there is "acquaintance," hovers over this white patch and every other as a sort of shadowy counterpart. No; we are said first of all to be "acquainted with" a particular white patch, and then, in consequence of seeing many white patches, easily to learn to "abstract" the whiteness which they all have in common. "In learning to do this we are learning to be acquainted with whiteness" (*ibid.*, p. 189). But here the antithesis between "acquaintance" and judgment seems to break down utterly. For how is such abstraction at all possible within the limits of "acquaintance" merely? It can, I take it, come about only by analysis of particular sense-data and by the comparison of the results of such analysis with one another. Now, judgment admittedly consists to a large extent in thus analysing and comparing, and it is pointed out that it is precisely in this process of analysing and comparing that the possibility of committing error evinces itself (cf., *e.g.*, p. 214). I ask, then, whether "knowledge by acquaintance" does, or does not, depend upon discrimination and comparison. If it does not, what are we to make of this account of the way in which we become "acquainted with" universals? If it does, wherein does it essentially differ from "knowledge about"; and, in particular, on what ground can it be held to be exempt from error?

(d) Often, certainly, Mr. Russell seems explicitly to deny that anything of the nature of discrimination or comparison is

implied by "acquaintance." And then naturally, the "thing" or "object" with which we are said to be "acquainted" tends to be represented as destitute of every distinguishing mark or characteristic—as a mere "this" or "that" in contrast with a "what." I imagine that most of Mr. Russell's readers have experienced the difficulty to which I am alluding. When a single sense-datum is spoken of as (say) red, extended and round, are we to understand that we know it as red, extended and round by mere "acquaintance"? One never feels sure of the answer that would be given to this question. Frequently the knowledge of the sense-datum as red and extended and round seems to be ascribed to so-called judgments of perception by means of which the sense-datum is analysed. It would thus appear that for "acquaintance" there could but be left over a blank residue, a "something one knows not what," to which, through the synthetic function of judgment, predicates become attached. But is there, in truth, any such entity to be found in experience as a residue of this description? And even though its presence be admitted, would the admission imply anything more than that here discrimination is reduced to a minimum? Objects that "appear merely as this, that and the other" must, at least, be to some extent distinguished from one another in order even to be denoted by names (cf. *Monist*, vol. xxiv, p. 445). A line of reflection which I seem to discern in much that has recently been written about "acquaintance" takes some such course as the following. If I take (say) an object X in the distance to be a sheep when in fact it is a pig, then what I am really aware of through "acquaintance" can be said (perhaps) to be an animal, about which, in pronouncing it to be a sheep, I judge wrongly; if, again, I take X to be an animal when it is in fact a lifeless object, then what I am really aware of, through "acquaintance," may be said (perhaps) to be a moving thing; and so on; until in the end the sphere of "acquaintance" may conceivably be filtered down to a mere X having some kind of being. Now,

it is manifest that at most of these stages what is called "acquaintance" *must* be dependent upon discriminative apprehension; I can only be immediately aware of an animal or of a moving thing on the basis of some "knowledge about" such entities. If, then, the facility of "acquaintance" varies with every advance made by the mind in its range of discriminative apprehension, is not that in itself sufficient to show that we cannot be here concerned with two totally disparate modes of knowing?

D.

I return now to the path I was following at the beginning. Mr. Russell means, as I said, by "acquaintance" (*a*) a relation of subject and object, and (*b*) a direct relation, understanding by "*direct* relation" a relation of such a kind that when a subject is in that relation, and in that relation alone, to an object, the object cannot appear to be "different from what it is." And, I repeat, that what I am venturing to call in question is whether a subject ever does have that kind of relation to an *object*. I am allowing that it may have that kind of relation to its awareness of an object; but I am urging that awareness of an object is never, in and for the state of mind whose content it is, itself an object. So far as I can discover, our difference here does not turn upon any difference in the meaning we are assigning to the term "object." By "object" I mean, and I gather Mr. Russell also means, that which, in cognition stands over against the subject, and that which there is no ground for assuming to be dependent either for its being or for its nature upon the circumstance of its being cognised. But what I am maintaining is that the relation between an object, as thus understood, and a subject never is a *direct* relation in the sense just indicated,—never is, that is to say, a relation in which the object cannot appear to the subject to be different from what, as a matter of fact, it is.

The nature of the difference between us discloses itself at

once when one turns to the sorts of entities that Mr. Russell specifies as "objects" with which there can, as he holds, be "acquaintance." The first and most obvious example is, he tells us, sense-data, and I can now confine attention to them. By a "sense-datum" we are to understand not such a thing as a table, which is both visible and tangible, can be seen by many people at once, and is more or less permanent, but just that patch of colour which is momentarily seen when we look at the table, or just that particular hardness which is felt when we press it, or just that particular sound which is heard when we rap it (*Knowledge of the External World*, p. 76. Cf., *Mysticism and Logic*, p. 147). In short, sense-data is another name for what are ordinarily called the sensuous "appearances" of a thing, and Mr. Russell himself frequently uses the latter term as the equivalent of the former. These "appearances" or "sense-data" are private to each individual percipient; and, for reasons which do not at present concern us, it is held that probably no two individual percipients ever have exactly similar "sense-data." My contention, then, in brief is that a "sense-datum," as thus understood, is not something that can be rightly said to "stand over against the subject as an external object" nor to exist independently of the cognising subject. It cannot be said to stand over against the subject as an external object, because it is not that upon which the subject's attention is (save in exceptional circumstances) directed; it cannot be said to exist independently of the subject, because from the mere fact that it is "private" to the individual percipient there is every reason for holding the common-sense belief to be well founded that it comes to be only in and through an act of apprehension which is directed not upon it but upon that of which *it* would ordinarily be said to be an appearance. Or, using other phraseology, it seems to me to be an error of analysis to treat a "presentation" not as the notion of presentation itself requires that it should be treated, *i.e.*, as a presentation of something, but as itself something presented, *i.e.*, as an

object, or a part, or a quality, of an object. I urge that the "sense-datum" or "presentation" or "sensible appearance" is essentially a product,—a product that has come about through the concrete situation of a mental act of apprehension being directed upon what Mr. Russell calls a physical object, that object consisting, however, as I conceive, not merely of the elements and qualities which the epithet "physical" is intended to cover, but of much else in addition, and, in particular, of those qualities of which in and through perception there arise sensible appearances.

Not only so. It seems to me inevitable that if, as I have maintained, an act of cognition is invariably an act of discriminating, of distinguishing, of comparing, there should emerge a product of the kind just indicated whenever an object in what I take to be the legitimate sense of that term is being apprehended by a subject. For the facility of discriminating exhibits endless degrees of adequacy, and so far as our experience goes is never, in any case, exhaustive. On this account alone, not to mention other reasons, there must ensue the contrast between the object, as it is in all its concrete fulness of detail, and so much of that detail as has been discriminated by the subject who stands to such object in cognitive relation. There is, therefore, nothing mysterious or inexplicable in the notion of "appearance."

That the contrast is, in fact, a contrast which, under the circumstances mentioned, must necessarily present itself finds, I have elsewhere argued, illustration from certain consequences to which Mr. Russell himself is led in working out his own position. A "sense-datum," although private to each individual percipient, he consistently takes to be a presented object, a "thing" which stands over against, and is independent of, the subject, after the manner in which, as it seems to me, only a "thing" in the ordinary sense of the word can be a presented object. And he is thus driven to admit that "two sense-data may be, and *must* sometimes be, really different,

even though we cannot perceive any difference between them.” “There must be among sense-data differences so slight as to be imperceptible: the fact that sense-data are immediately given does not mean that their differences also *must* be immediately given (though they *may* be).” And on the strength of this consideration, he argues that from the nature of sense-data, as we are “acquainted with” them, no valid proof of the doctrine that they are not composed of mutually external units can be obtained (*Knowledge of the External World*, p. 144 *f.*). But, if two sense-data that are really different are presented to us as not different, or if sense-data that are really composed of mutually external units evince themselves in immediate experience as continuous, I do not see how objection can be taken to the statement that, in such cases, sense-data appear to be different from what they are. And if it be contended that the statement only means that we are making false judgments about them, one can but point out that the contention is virtually conceding the inseparability, so far as the instances in question are concerned, of judging and being “acquainted with,” for it will not, I imagine, be maintained that we are here *first* “acquainted with” the sense-data as different or as mutually external units, and *then* judge them to be not different or to be continuous. Still more decidedly, Dr. Moore, in his Presidential Address, allows the possibility of a sense-datum *seeming* to be smaller than it really is, or of it *seeming* to be of another shape from what it really is, or of it *seeming* to be different in colour from what it really is (*Proceedings of Aristotelian Society*, N.S., 1919, vol. xix, p. 23). In this portion of his Address, Dr. Moore was, in fact, describing in his own way very much what I conceive to be the true view. For he was then supposing what he still called the “sense-datum” to be identical with a certain part of the surface of what may, for our present purpose, be called a “real thing.” In other words, so far from being “private to an individual percipient,” he was then regarding the “sense-datum” as that which may be apprehended by any number of percipients.

But it is, I venture to urge, vital to any profitable discussion of our problem that we should be clear as to the fundamental divergence between the two views here in question, —a divergence which tends to be obscured by the use of the word "sense-datum" in two totally different senses. For, on the view I am taking, there is, of course, still a factor (if I may so call it) which *is* "private to each individual percipient," —namely, the "seeming" or the "way of appearing." If, however, the object be a "real thing," or a part of the surface of a "real thing," then obviously that object is neither an "appearance" nor a complex of "appearances." Nay, more. It is, in that case, no less obviously an error to speak of "appearances" as though they were existent entities; indeed, the transition from "things as appearing" to "appearances" is, in strictness, an illegitimate transition, and I suppose one ought to avoid employing the term, except that its employment saves a great deal of circumlocution. I cannot help thinking that many of the difficulties that have been thought to be inherent in the position I am defending arise in fact through confusion in this reference. Let me have recourse to an illustration. If, to take Mr. Broad's instance (*Encyclopædia of Religion and Ethics*, vol. x, p. 590), a cup which is believed to be round be viewed from other points of view than those which lie in a line through the centre of the circle, and at right angles to its plane, it appears elliptical. Now, it is easy enough to convert the statement that the cup, under such circumstances, appears elliptical, into the statement that there are, under such circumstances, "elliptical appearances," understanding thereby that there are actual entities to which the quality "elliptical" is to be ascribed. And, then, it is plausible to argue that "the elliptical shape which is seen from the side is as good an object as the circular shape seen from above." No doubt it is; but only because neither of them is an object. There is not, that is to say, in either case, a "thing" called "a shape" which has the quality of being circular or elliptical; the

"thing" is the cup, and if it actually possesses the quality of being round in shape, then when it looks round *it* looks to be as it is, and when it looks elliptical *it* looks to be different from what it is. To insist that, in the latter case, something is elliptical and to ask *what*, then, that something *is* seems to me to be taking for granted exactly that the existence of which is in dispute. The meaning of the contention against which this objection is pressed is that, in the situation supposed, there is nothing which *is* elliptical but only something which *looks*, or *seems to be*, elliptical. Because we can familiarly talk of the "look" of a cup and distinguish it from the cup, it follows not in the least that corresponding to this distinction there must needs be two existents, one of which has the spatial characteristic of a specific kind of ellipticity.

Again, it has been argued that, when to a conscious subject a round cup seems elliptical, the state of mind involved must be very different from the state of mind involved in making a false judgment. The fact that the cup appears elliptical may never lead me to make the false judgment that it is elliptical; and even though it should do so, and the error were afterwards corrected, the cup would not cease to appear elliptical. I may quite well judge that the cup is round at the very moment when it looks, or appears to me to be, elliptical. I cannot see, however, that this argument proves what it is supposed to prove. All it seems to me to prove is—what, of course, no one doubts—that the act of judging the cup to be round is here a different act from that involved in its seeming to be elliptical. It does not show that the latter is not also in essence an act of judgment, based, indeed, upon grounds quite other than the grounds upon which the former is based. Why should the circumstance that I judge the cup to *be* round be supposed to be incompatible with my also *judging* that it seems to be elliptical? Moreover, it is worth noting, in this connexion, that very often in such circumstances as those just mentioned the one act does very materially influence the other. Generally, if I believe a cup to

be round, I am perfectly oblivious of the fact that when I am seeing it obliquely it looks elliptical; the judgment that it is round so affects my act of visual apprehension that usually it seems to me to be round when otherwise it would seem to me to be elliptical. No psychological fact is more notorious than the way in which our knowledge of what we take to be the real shape of objects affects our awareness of their apparent shape; the apparent shape is often difficult to determine and can only be got at by artificial means.

I come, in the end, once more to the question of truth and error, and will try now to bring to a head the issue that is really before us. I agree that no *object* of sense-apprehension can be true or false, in the sense in which propositions are true or false. But if what I have been contending has any justification, it follows not at all that the *way in which an object appears* may not be true or false, and true or false in the sense in which propositions are so. A proposition is declared to be true when it *corresponds* to a certain associated complex which is a "fact," and to be false when it does not (*Problems of Philosophy*, p. 201). And similarly an "appearance" (if now I may use that word without its carrying the implication I have repudiated) is true when it *corresponds* to a certain associated complex which is the "fact" here denoted as the object and false when it does not. And it seems to me that recognition of the more complicated correspondence is dependent psychologically upon recognition of the simpler correspondence which I take to be involved in the apprehension of objects of sense.

There are other points to which I should have liked to refer, but I content myself with one further observation. Sometimes it appears to be thought that whether what is called "acquaintance" does or does not "involve" discrimination is a subsidiary matter, and that the essential nature of "acquaintance" may be conceived to be the same whichever view we take. I believe this to be a complete mistake. If discrimina-

tion is "involved" at all, it is involved as constituting the core and essence of cognitive activity. It implies that neither an object nor its ways of appearing can ever be "immediately experienced," or "lived through" (*erlebt*) as the awareness of such object, or of its ways of appearing, can be "immediately experienced" or "lived through." I am not assuming that in the history of the mental life cognitive apprehension is primordial. As we descend the scale of mental development, we come to objects more and more confusedly apprehended, but which at each stage afford the material for further discrimination. We seem, thus, brought at length to a stand before the problem of a first beginning. The problem would be indeed an insoluble one were we to conceive of the conscious subject as, at any stage, merely a cognitive being. But in the earliest phases of mental life, it may well be the case that the three stems (if the metaphor be permitted) of cognition, feeling-tone and striving have not as yet branched out, so to speak, from their common root, and that in the shape of what is obscurely felt an original material is furnished for the first crude acts of discrimination. I can see no reason for refusing to admit the possibility of, for example, a dim consciousness of pain prior to the appearance of anything that could rightly be described as cognition. And painful feeling is no doubt "immediately experienced" or "lived through." The essential point, however, is that it is neither an object nor in itself that from which the act of apprehending an object could ever emerge.

II. *By* G. E. MOORE.

I MUST plead guilty to being one of the persons alluded to by Dr. Hicks, who have contended that what Mr. Russell has primarily meant by "acquaintance" is a relation with which we are all perfectly familiar, and with regard to which no one wishes to dispute that it is a relation which does sometimes hold between things. And I still think I was right in this contention. I still think that when, for instance, Mr. Russell has asserted that we are "acquainted" with different sense-data at different times, he has primarily used this language merely to express a fact, which we all know to be a fact, and which no one wishes to dispute. It seems to me that Dr. Hicks's disallowance of this contention simply rests on a confusion between what Mr. Russell has *meant* by acquaintance, and Mr. Russell's theories *about* acquaintance. Dr. Hicks seems to think that because Mr. Russell has described acquaintance as having certain characteristics, Mr. Russell must have meant, when he has asserted that we are acquainted with sense-data, that we have to them a relation which has those characteristics; and that hence, unless it is true that we do have to them a relation having those characteristics, it must be untrue that we are ever acquainted with them. He might just as well argue, I think, that because Mr. Russell has described judgment as a multiple relation having certain characteristics, therefore there is no such thing as judgment, unless we do have to things a multiple relation having the characteristics in question. It seems to me quite plain that what Mr. Russell has primarily meant by "judgment" is what we all mean—a kind of fact, the existence of which no one disputes; and that even if his theory that it is a multiple relation of a certain kind is untrue, that would not at all entitle us to say that there is no such thing as what he means by "judgment." And, similarly, I still think that what he has primarily meant by "acquaintance" is a kind

of fact, the existence of which no one disputes ; and that, even if all the various theories which he has propounded about this fact were untrue, that would not at all entitle us to say that there is no such thing as "acquaintance." I do not, indeed, wish to deny that Mr. Russell may *sometimes* have used "acquaintance" not merely as a name for this indisputable fact, but in such a way that, in asserting that we are acquainted with some objects, he may have been asserting the truth of one or more of his theories about it. How far, and whether at all, he has thus introduced into the actual connotation of the term, one or more of the characteristics which he has believed the indisputable fact to possess, I could not undertake to say. But I still think that his primary use of the term has been simply as a name for an indisputable fact.

It seems to me that how Mr. Russell has primarily used the term is simply as a name for a relation which we do undoubtedly have at times to sense-data, and to different sense-data at different times. I quite certainly am at this moment acquainted with many different sense-data ; and in saying this, I am merely using this language to express a fact of such a kind, that nobody has ever thought of disputing the existence of facts of that kind. A solipsist, if there is one, may perhaps doubt whether *I* am acquainted with sense-data ; but nobody has ever doubted that he himself is acquainted with them. But in trying to explain what sort of an indubitable fact it is, which I express (believing myself to be using "acquainted" in precisely the sense in which Mr. Russell has primarily used it) by saying that I am at this moment acquainted with many different sense-data, we are met by the difficulty that the very people who think they dispute whether there is such a thing as "acquaintance," seem also very often to think that they doubt whether there are such things as "sense-data." Those who think they doubt this seem to me to have been making a confusion of the same kind as that which Dr. Hicks seems to me to make about acquaintance. They have been confusing the things which Mr. Russell has

called sense-data—the existence of which no one disputes or ever has disputed—with certain of his theories *about* these things. He has, in various places, maintained with regard to sense-data (1) that they are not, in a certain important sense, "*in the mind*," and (2) that they are not, any of them, identical with those surfaces of physical objects, to which some of them certainly stand in a relation, which may be indicated by saying that *either* the sense-data in question are identical with the surfaces in question, *or* our perception of the surfaces in question is certainly "mediated by" the sense-data in question. And some people seem to think that if the things which he has called "sense-data" have not got both these characteristics (and perhaps others) which he has supposed them to have, then the things in question are *not* "sense-data" in the sense in which he has used the term; and that hence it is really doubtful whether there are any such things as he has meant by "sense-data." It seems to me that this is a complete mistake, even more decidedly so than in the case of "acquaintance."

I doubt if Mr. Russell has ever introduced into the connotation of the term "sense-datum," either the characteristic "thing that is not in the mind," or the characteristic "thing not identical with the surface of any physical object;" and I feel quite sure that he has used it primarily simply as a name for entities, the existence of which no one disputes, and without implying, by calling these entities "sense-data," either the one view with regard to them or the other. If we want to indicate what sort of entities he has meant by "sense-data," in a way which will leave no doubt that there certainly are entities of the sort, I do not know that there is any clearer way of doing so than that which I suggested in my Presidential Address, namely, by saying that they are the sort of entities about which we make such judgments as "This is a coin," "That is a tree," etc., when we are referring to something which we are at the moment perceiving by sight or touch. Everybody can easily discover for himself the entity about which he

is talking, when under such circumstances he judges "That is a tree." And in calling this entity a sense-datum, we by no means imply either that it is not identical with that part of the surface of the tree which he is seeing, nor yet that the opposite philosophical view according to which, so far from being identical with this part of the surface of the tree, it is merely a sensation in his own mind, may not be the true one.

If in this or any other way, we once understand what the things are which Mr. Russell has called "sense-data" we can, I think, go on to give some indication of what he has meant by "acquaintance" by saying that it is *one* of the relations, which, when I make such a judgment as "That is a tree," I undoubtedly have to the sense-datum about which I am making it. *Which* among these relations (for there are undoubtedly several, which, in such a case I always have to the sense-datum in question) I think it is very difficult either to decide or to point out. But in order to make the point that acquaintance with sense-data is something which nobody has ever doubted to exist, it is, I think, sufficient and important to insist that "acquaintance" is merely a name for some one, out of several relations which everybody can easily see, without the possibility of doubt, that he has to the sense-datum in such a case. If we want to specify still further the relation meant, we can, I think, make a first approach by saying that what is meant by saying that he is acquainted with the sense-datum is *either* identical with what would be meant, in such a case, by saying that the sense-datum is "an object to him" or "before his mind," *or* is at least something such that from the fact that he is acquainted with it, it follows that it is an object to him. In other words, "acquaintance" is either identical with "*the* relation of subject or object," *or* with one particular variety of that relation. Any further specification of the relation meant is, I think, extremely difficult. I am not quite sure that sometimes, when Mr. Russell has talked of acquaintance with sense-data, he may not have been using "acquaintance" as a name

for that relation (implying that the sense-datum in question is an object to me) which I so plainly have, for instance, to a given visual sense-datum while I am actually seeing it, and which I equally plainly no longer have when I shut my eyes and remember it, even though only a second or two may have elapsed between the seeing and the remembering. But if he ever has done so, then when he has maintained that it is possible that, in such cases of remembering, I am still acquainted with the sense-datum, he has either been making a sheer mistake, which it is difficult to believe he could have made, or has been using "acquaintance" for another and more general relation, with regard to which it is possible (though not certain) that I have it to the sense-datum equally when I see and when I remember it. Sometimes, too, when he has maintained that we are acquainted with universals, he has, I am inclined to think, meant by "acquaintance" a relation which we certainly do have to sense-data, but which I doubt whether it is possible we should have to universals. I feel very doubtful about all this, but I will try to indicate the sort of view which seems to me to be the true one.

I am inclined to think that the sense in which we are acquainted with universals (though there is one) is essentially different from that in which we are acquainted with sense-data. Let us represent the kind of acquaintance which we have with sense-data by A^1 and that which we have with universals by A^2 . What I mean by saying that A^1 and A^2 are essentially different is that the only sense in which we can truly be said to be acquainted *both* with sense-data and with universals, is if we use "S is acquainted with O" to mean "S has to O *either* A^1 *or* A^2 ." That, Mr. Russell, when he has asserted that we are acquainted with things, has ever actually had in his mind a purely disjunctive relation of this kind, I doubt; though, of course, if we ever do have to a sense-datum the relation A^1 , it follows that it can also be truly said of us that we have to it *either* A^1 *or* A^2 . If this be

so, when he has asserted that we are acquainted both with sense-data and with universals, implying, as he has done, that there is some one sense in which we are acquainted with both, I think the probability is that he has sometimes been asserting that we have A^1 to universals, which according to me would be a mistake; though sometimes, when asserting that we are acquainted with universals, he has, I do not doubt, been asserting merely that we have to them that relation, A^2 , which we certainly do have to them. But all these doubts as to *which* of the various relations, implying that the sense-datum in question is an object to us, which we certainly do have to sense-data in cases like those I have mentioned, is the one which Mr. Russell has meant by "acquaintance," do not, of course, affect my point that, in using the word, he has generally used it to stand for *some* relation which nobody has ever doubted that we do have to certain objects. Nor need these doubts, I think, hamper us in discussing his theories about our acquaintance with sense-data; since the question whether these theories are true depends, I think, upon considerations which would yield the same result, whichever of the relations which we do undoubtedly have to sense-data, and which he may have meant by acquaintance with them, be taken as the one he did mean.

I take it then, that the proper answer to our question: Is there Knowledge by Acquaintance? is that undoubtedly there is, and that nobody has ever doubted that we have it; and that what those who have raised the question have really meant to dispute is not the existence of acquaintance, but merely the truth of some of Mr. Russell's theories about it. But which of his theories about it are the ones in dispute?

I should like first of all to mention one, which I do not intend to discuss, because, as far as I can make out, it is not one that is disputed by Dr. Hicks or Dr. Edgell, but which I wish to mention because it offers a case in which I think Mr. Russell has perhaps sometimes used the term acquaint-

ance, not merely for an indisputable fact, but in such a sense that there is no such thing as acquaintance, unless one of his theories is true; and because it will serve to make plain exactly what, and how little in one respect, I mean to assert when I assert that we are indisputably acquainted with sense-data. In his articles in the *Monist* in 1914 Mr. Russell has discussed a view which he has chosen to call "Neutral Monism"; and once or twice in those articles he has used language which seems to me to suggest that, in his view, the Neutral Monists can be said to deny the very existence of what he calls "acquaintance," simply because they deny one particular theory of his as to the nature of acquaintance, which he there tries to defend against them. What I wish to make clear is that Neutral Monists do not for a moment deny the existence of what I am calling acquaintance with sense-data, and what I take Mr. Russell generally to have meant by that term. All that they do is to offer a particular analysis of the kind of fact which I express by saying that I am acquainted with sense-data, without, of course, denying, any more than anybody else does, the existence of facts of the kind they are analysing. In other words, the sense in which I am using acquaintance, and in which I suppose Mr. Russell generally to have used it, is precisely that in which in those articles he has chosen to use the word "experience." The Neutral Monists do not, of course, deny that two different sense-data, *e.g.*, a visual and an auditory one, may both (in this sense) be "experienced" by me at a given time; all that they do is to offer a particular theory as to the nature of the fact which is expressed by saying that two such sense-data are experienced by me. The main points in their theory, if I understand Mr. Russell rightly, are two, namely (1) a contention which can be at least roughly expressed, by saying that the fundamental fact which is expressed by saying that the visual sense-datum V and the auditory one A are both being experienced by me, consists merely in the holding between V and A of a relation, which is

“direct,” in the sense that it does not consist (as language would lead us to think) in the fact that V and A both have the same non-symmetrical relation to a third thing—a subject S—which can be said to be *what* experiences both; and that, though, therefore, both V and A are experienced, and experienced by the same individual, yet there is, strictly speaking, *nothing* which experiences either of them: and (2) a further contention as to the nature of the relation which, in such a case, holds between V and A. What, I take it, Mr. Russell is there mainly concerned to argue against them is that their contention (1) is wrong: that the fundamental symmetrical relation which I know to hold between A and V, when I know that both are being experienced by me, is not a direct relation in the sense in which they say it is, but does really involve that A and V should have the same non-symmetrical relation to some third thing—a subject, S. And what Mr. Russell’s language seems sometimes to suggest is that what he means by “acquaintance” is this supposed non-symmetrical relation, the existence of which the Neutral Monists do deny, and which does, in fact, exist only if their theory is a wrong one. What I have been assuming is that Mr. Russell has not primarily meant by “acquaintance” this supposed non-symmetrical relation, the existence of which is, of course, disputable; but that when he has said that we are acquainted with sense-data, he has generally meant merely to assert the indisputable fact, which the Neutral Monists admit and are trying to analyse. And, whether I am right or wrong in this view as to his usage, I wish to make it quite plain as regards myself, that though I have talked—as it is very difficult to avoid doing—as if acquaintance were a relation between me and the sense-data I am acquainted with, I do not, when I assert that I certainly am acquainted with sense-data, in the least wish to imply that the Neutral Monists are wrong in their analysis of the facts: I only wish to assert an indisputable fact of the kind they are trying to analyse. This particular theory of Mr. Russell’s about acquaintance, which

consisted in denying the contention of the Neutral Monists about it, seems to me to be one of the most interesting and important of the theories he has held about it : and it seems to me quite possible that Mr. Russell was wrong with regard to it, and that the Neutral Monists are right. But I do not intend to discuss it, because, so far as I can make out, both Dr. Hicks and Dr. Edgell are very far from wishing to assert the truth of Neutral Monism, and also, so far as I can see, the question whether it is true or not is quite irrelevant to the truth of those theories of Mr. Russell's which they are concerned to dispute.

What, I take it, they are mainly concerned to dispute is one particular theory of Mr. Russell's, and one only ; the theory which Dr. Hicks has tried to express in his paper on "The Basis of Critical Realism" (*Aristotelian Proceedings*, 1916-17, p. 331) by saying that Mr. Russell supposes that there *can* be acquaintance without judgment.

Now this, I think, is not a good way of expressing the theory of Mr. Russell's, which Dr. Hicks, and Dr. Edgell too, I think, really wish to attack. For, so far as I can make out, Dr. Hicks himself admits that we can have acquaintance without *judgment*. In a later passage, in the same paper (*ibid.*, p. 336), all that he ventures to assert is that "the crudest act of sense apprehension is still an act of discriminating and comparing, an act involving, therefore, the characteristic that, *in a highly developed form*, is fundamental in an act of *judgment*." (The italics are mine.) He here clearly implies that we can have acquaintance without judgment ; only maintaining that we cannot have it without *discrimination and comparison*, acts, which, according to this later passage, are not, in his view, themselves judgments, although, according to him, they do possess, in a less developed form, the characteristic which is fundamental to judgment. I think, therefore, we must conclude that when, in the earlier passage, he seemed to imply that he did dispute the doctrine that we can have acquaintance without judgment, he must have been using "judgment" in a much

wider sense than that in which he is using it in the later one—a sense so wide that, in it, acts of discrimination and comparison *are* acts of judgment. This extremely wide sense of the word “judgment”—a sense so wide that, if I merely discriminate two sense-data, with which I am acquainted, A and V, this act of discrimination may be said to be a “judgment” of mine *about* A and V, has, I think, been common enough among psychologists; and, if we were to adhere to it, we might, I think, describe the theory of Mr. Russell’s which Dr. Hicks and Dr. Edgell wish to attack, as the theory that we can have acquaintance without judgment. But, I think, it is very misleading to use the word “judgment” in so wide a sense; and we can, I think, express the same theory, in a slightly longer, but less misleading way, by saying it is the theory that we can be acquainted with a sense-datum without *either* judging *or* knowing anything *about* it. It is, I think, natural enough to say that to discriminate two sense-data A and V is to *know* something about them, though not at all natural to say that it is to *judge* something about them.

Now there is no doubt, I think, that Mr. Russell has maintained, with regard to acquaintance, that we *can* be acquainted with a sense-datum without either judging or knowing anything about it. But, if we are to say so, we must, I think, be very careful as to what we mean by *can*. When people say we *can’t*, they may only mean that, *in fact*, we never *are*; and Mr. Russell has been careful to explain that he does not for a moment wish to deny this; he does not for a moment wish to assert that we ever are acquainted with anything without at the same time knowing some truth about it (*Problems of Philosophy*, p. 72).

Another thing which may be meant by the assertion that we *cannot* have acquaintance with certain things, without either judgment or knowledge *about*, is that, as a matter of fact, our acquaintance with them is *causally* dependent on judgment or knowledge about: that we never should have attained to

acquaintance with them, had we not previously judged or had knowledge about something else. This seems to me to be all that Dr. Hicks is urging when he maintains that acquaintance with universals "involves" discrimination and comparison. He seems to mean simply that it is *causally* dependent on them. But, so far as I know, Mr. Russell has never denied that acquaintance with *some* things (or even with *all*) may be *causally* dependent on judgment or knowledge about others. So far as this part of Dr. Hicks's argument is concerned, he seems to me to be simply arguing against a view which Mr. Russell has never held.

The only sense in which Mr. Russell *has* maintained that we can be acquainted with a sense-datum, without either judging or knowing anything *about* either it or anything else, is, I think, as he has once put it (*Problems of Philosophy*, p. 72) that acquaintance is *logically independent* of knowledge of truths; or, to put it in another way, that a subject *could* be acquainted with something without simultaneously knowing or judging anything *about* anything; or to put it in still a third way, that it is *conceivable* that a subject should be acquainted with something, without such knowledge or judgment. This, I take it, Dr. Hicks and Dr. Edgell must mean to dispute, if they are disputing anything held by Mr. Russell at all, when they say that acquaintance is impossible without either judgment or knowledge about it. And, on the assumption that they do mean to dispute it, I will say what I can on the question whether Mr. Russell was right or not. It seems to me that acquaintance only *can* be *logically* dependent on judgment or knowledge *about*, if what I know, when I know that I am acquainted with a particular sense-datum is simply and solely that I am knowing something about it. And it seems to me *possible* that this is really the case, and that therefore Mr. Russell was wrong in maintaining the logical independence of acquaintance from knowledge about. One argument, which it is obvious to urge in favour of Mr. Russell's

view, namely, that knowledge about a sense-datum, in the sense required (*i.e.*, knowledge about a sense-datum, which is not merely known to the knower by description), seems obviously to *pre-suppose* acquaintance with it, is, I think, easily answered. We can, I think, easily suppose that knowledge that so and so is true of A, in the sense in which, to have such knowledge, I must be acquainted with A, is really an ultimate notion; and that why it seems to pre-suppose acquaintance with A, is because, from the fact that I know *this* particular thing about A, *e.g.*, that A is other than V, it follows that I know *something* about A. The only strong argument in favour of Mr. Russell's view seems to me to be that, in particular cases, my knowledge that I am acquainted with this and that sense-datum does not seem, on immediate inspection, to be what, on the other view, it must be, namely, a mere deduction from the fact that I know this or that about it: it does not look for instance, as if my knowledge that I am acquainted with this sense-datum, A, were a mere deduction from my knowledge that I am discriminating it from that other, V, or from any other such piece of knowledge. But this argument does not seem to me at all conclusive. If, on the other hand, we turn to ask what arguments there are *against* Mr. Russell's view, I cannot help thinking that a certain weight is to be attached to the fact that if "I am acquainted with A" did merely mean "I am knowing something about A," this would offer an easy explanation of the apparent fact that, in order to know anything about A in the sense in question, I *must* be acquainted with A. The "must" would, on this view, merely express the obvious fact that from "I know *this* about A" it follows that I know *something* about A. On Mr. Russell's view it is, I think, difficult to explain in what sense and why (as he maintains) knowledge and judgment about, both pre-suppose acquaintance. But this argument also does not appear to me conclusive.

As for Dr. Hicks, I have failed to discover in what he says

any argument which seems to me to tend to show, even remotely, that Mr. Russell was wrong on this particular point. But Dr. Edgell has in *Mind* (April, 1918) offered an argument, with regard to which, so far as I understand it, I will try to explain why I do not think it convincing. I understand her to urge that, if Mr. Russell were right in maintaining "acquaintance" to be logically independent of knowledge *about*, it would be unintelligible how, starting merely with acquaintance, we should ever have attained to knowledge *about*, and that mere acquaintance with sense-data, however many we might be acquainted with, would never *explain* how we came to know anything about them. Now, with regard to this argument, I would say, first, that, so far as I know, Mr. Russell has never maintained that, either in the history of the race or of the individual, we do start with mere acquaintance with sense-data, and no knowledge about them. So far as I know, it is perfectly open to him to maintain that, from the beginning, we always in fact have knowledge about as well as acquaintance. But even against a person who should maintain that in the history of the race or individual, or both, we do start with mere acquaintance with sense-data, and no knowledge *about* them, I cannot see that the argument is convincing. It may be true that no amount of acquaintance with sense-data would explain, *by itself*, how we could ever attain to knowledge about, or, for instance, to acquaintance with universals. But surely it is legitimate to hold that for a complete explanation of many mental phenomena it is necessary to refer not only to previous mental phenomena, but also to events in the body. I should myself say that, for instance, to explain recognition, with which Dr. Edgell was particularly concerned, it is certainly necessary to refer not only to what has previously happened in the mind of the individual who recognises, but also to the organisation of his brain: nothing that has previously happened in his mind, will, *by itself*, explain a single act of recognition. And similarly, even if acts of acquaintance with sense-data, by themselves, can never explain

how we should come to have knowledge *about* sense-data or acquaintance with universals, I do not see why they, *together* with a certain cerebral organisation, should not explain it. Thus even if we did start with acquaintance alone, it seems to me perfectly intelligible that, provided our brains were organised in a suitable manner, we should have subsequently come to have also knowledge *about*.

There is one other point which seems to me to be raised in Dr. Hicks's paper, though in a very obscure and confusing manner, about which I should like to say as clearly as I can what seem to me to be the facts. Mr. Russell has, I think, implied that no object with which we are acquainted can ever be true or false, in the sense in which propositions are true or false, and in which every proposition must be either true or false and cannot be both. And this contention, of course, implies that we never are acquainted with propositions. Now, waiving, for the moment, the question whether he was or was not right in holding that we never are acquainted with propositions, it is, I think, undoubtedly true that no object, *other* than a proposition, can possibly be true or false in the sense in which a proposition is so. And from this latter fact there follows at once, I think, the main part of what Mr. Russell has meant by saying that acquaintance cannot be deceptive—a statement to which Dr. Hicks seems to object so strongly. Sense-data, for instance, are not propositions; and hence it follows at once that my acquaintance with a sense-datum cannot be said to be false in the sense in which ideas or judgments of mine can be said to be so; since to say of an idea or judgment of mine that it was false is simply equivalent to saying that it was a conceiving or affirming of a proposition, and that the proposition in question is a false one. This, I think, is the primary sense in which acquaintance with objects other than propositions cannot possibly be false. What is meant is not that an act which is an act of acquaintance with a sense-datum, may not also be false; for the same act which is an act of acquaintance

with a sense-datum may also, so far as I can see, be a judgment about it and a false one. What is meant is only that the characteristic which we attribute to an act, when we say that it is an act of acquaintance with a sense-datum, is one in respect of which it cannot be true or false; since to say that it was true or false in respect of this characteristic, would be to say either that a sense-datum is itself a proposition or that objects, other than propositions, can be true or false in the same sense in which propositions are so.

I take it, then, that the only part of Mr. Russell's doctrine on this head which is open to attack, is his contention that we never are acquainted with propositions. And his reasons for holding this were, of course, exactly the same as his reasons for holding that judgment is a multiple relation. They were, I take it, put briefly, that there simply are no complexes, no "single objects," which are propositions; or, to put it in another way, that when a man believes or conceives the hypothesis, *e.g.*, that there is a future life, it is a mistake to suppose that the phrase "that there is a future life" stands for any single object to which he has a relation; there simply are, in other words, no objects such as Meinong has supposed "objectives" to be. This doctrine, I take it, Dr. Hicks disputes, but I cannot see that he has brought any arguments against it. And it would take far too long for me to try to discuss it here. It was discussed at great length by Professor Stout in the *Proceedings* for 1914-15. I will only say, that though it does not seem to me certain that Mr. Russell was right in this contention, I am strongly inclined to think that he was, and should be prepared, on a proper occasion, to defend that view.

III. *By* BEATRICE EDGELL.

THE first part of Dr. Moore's paper is a testimonial to Mr. Russell's good intentions. No matter what Mr. Russell may have said he means by acquaintance, and he has said a good deal, he has, according to Dr. Moore primarily meant to express a fact which we all know to be a fact and which no one wishes to dispute. If this is so, do not let us waste time by disputing it; but in the meantime, what fact? Dr. Moore says, one of the several relations which everybody can easily see, without the possibility of doubt, that he has to the sense-datum in making such a judgment as "That is a tree." He goes on to express it as *the* relation of subject to object or one particular variety of that relation.

Passing from the fact of acquaintance to the question is there knowledge by acquaintance? Dr. Moore answers that undoubtedly there is and that no one has ever doubted that we have it. He asserts that those who raise the question are merely disputing one of Mr. Russell's theories about acquaintance. That may be, but the theory in question is the so-called fact that there is such a cognitive relation as acquaintance. "I say I am acquainted with an object when I have a direct cognitive relation to that object, *i.e.*, when I am directly aware of the object itself. . . . I think the relation of subject and object which I call acquaintance is simply the converse of the relation of object and subject which constitutes presentation" (B. Russell, *Proc. Aris. Soc.*, 1910-11, p. 108).

What I have disputed is that there is knowledge which is not essentially "knowledge about." Dr. Moore is careful to distinguish between maintaining that we can be acquainted with a sense-datum without at the same time knowing about it and maintaining that as a matter of fact we ever are so acquainted; he says that Mr. Russell has never asserted the latter. When

he himself asserts that no one has ever doubted that we have knowledge by acquaintance is he referring to the logical possibility or to the knowledge which, as a matter of fact is accompanied by (?) knowledge about? Even if, as Dr. Moore points out, Mr. Russell has only claimed the logical independence of "knowledge by acquaintance," he has, as Dr. Moore himself recognises, claimed further that all "knowledge about" is logically dependent on "knowledge by acquaintance." We have then this position. Whenever, in fact, there is A there is also B. A is logically independent of B but B is logically dependent on A. My contention is that all knowledge is B, "knowledge about." I believe A, "knowledge by acquaintance," to be a myth invented by epistemology.

In the article alluded to by Dr. Moore I claimed that knowledge as described by the theory of knowledge must be psychologically possible, and that "knowledge by acquaintance" was psychologically impossible, for the reason that from it there could be no advance. "As I understand Mr. Russell's acquaintance there would be momentary flashes of something—I hesitate to call it cognition—but each flash would be discrete, insulated. How awareness of likeness and difference could arise therefrom is to me a mystery. The object presented is simple or unrelated" (*Mind*, vol. xxvii, p. 182). When Mr. Russell says, "All our knowledge, both knowledge of things and knowledge of truths rests upon acquaintance as its foundation," he may not have meant that our knowledge of things and our knowledge of truths develop out of acquaintance, he may have meant something quite different; but as a matter of fact he does try to show how our acquaintance with the universals, termed sensible qualities, develops out of acquaintance with the particular this and that. I quoted the instance of acquaintance with the white patch, referred to by Professor Hicks, and said: "My trouble is to see how we could ever learn anything, however retentive we might be, from a repetition of acquaintance with a sense-datum as described by Mr. Russell"

(p. 181). Dr. Moore regards this as a problem for physiology. It seems to him perfectly intelligible that, provided our brains were organised in a suitable manner, "knowledge by acquaintance" would lead to "knowledge about." I have a great respect for the integrative action of the nervous system, but I cannot conceive of this achievement. On the contrary, reference to the structure and function of the nervous system seems to rule out of court any conception of cognition as originating in discrete, insulated items of knowledge. But the *onus probandi* lies on Dr. Moore.

I will now try to indicate why I regard "knowledge by acquaintance" as a myth invented by epistemology. It is significant that Dr. Moore passes directly from the fact of acquaintance, which he specifies as the relation of subject to object or some variety of that relation, to the statement that there is undoubtedly knowledge by acquaintance.

It is commonplace to say that whereas the psychologists of the age of James Mill set out on their psychological analysis from the standpoint of physics and chemistry, the present day writers set out from the standpoint of biology. Mental processes are treated as living processes, all the biological conceptions of growth, development, organism are taken over as suitable view-points from which to contemplate the facts of mental life. Historically the transition from the one standpoint to the other is interesting. The different editions of Bain's treatises show the influence of the change on the method of exposition. In Spencer the old and the new conceptions are found side by side. At the present time the treatment of instinctive activities and emotions seems to show the complete triumph of the biological standpoint. It will be claimed that the same change has determined also the exposition of the psychology of cognition. No doubt it has, but its success here is not so complete. Cognition has been treated from the biological standpoint, but it has also been treated from the standpoint of epistemological analysis. Between psychology

and epistemology there should be the closest alliance ; and it might have been expected that an epistemology which itself came under the influence of evolution would have greatly advanced psychology.* But to a very large extent interest in epistemology overshadowed all interest in psychology. Now that idealism is challenged there is an effort to reconstruct the psychology of cognition in such a way as to harmonise it with the doctrines of realism. But a call for revision has come also from a quite different quarter, viz., medical science. Some new working hypotheses have been urgently needed to explain the ideas which possess sick men's souls, their fancies, their dreams, their loss of memory. These phenomena must be shown to be the outcome of living processes at work within the man, facts whose origin and development can be traced in his history ; they can no longer be attributed to the agency of fortuitous circumstances. A psychology which linked up the theory of instinctive impulse and emotion with the theory of subconsciousness has appealed to many as a "live" psychology, and offered a working basis for psycho-therapeutics. It is obvious that if the biological standpoint in psychology is the right one, the psychology of cognition must be brought into relation with the psychology of conation and feeling. The life of mind must be the life of an organism which develops as a whole.

When Dr. Ward's article on psychology appeared in the ninth edition of the *Encyclopædia Britannica*, 1885, it marked the parting of the ways between the old and the new psychology. I hope it will not seem either presumptuous or

* "I would treat the forms of judgment and inference as science treats the forms of animals and plants, not in the spirit of enumerative classification, but in the spirit of morphological analysis. . . . The form of thought is a living function, and the phases and movements of this function are varieties and elements of the form. Therefore, the 'Morphology of Knowledge' must be construed as not excluding the Physiology of Thought. The science of intellectual form includes this science of intellectual life."—Bosanquet, *Logic*, Introd.

irrelevant if I try to bring out my incredulity with regard to "knowledge by acquaintance" by examining Dr. Ward's *Psychological Principles*, 1919.

Dr. Ward analyses individual experience into the duality of subject and object. The relation of subject to object is the relation of presentation. On the one hand, there is the subject who has the single capacity, feeling, and the single activity, attention; on the other hand, there are presented objects or presentations, which in their simplest forms are sensations or movements. As a summary of his analysis, Dr. Ward gives us a table wherein we have:—a subject non-voluntarily attending to changes in the sensory continuum; presentation of sensory objects; being in consequence either pleased or pained and by voluntary attention producing changes in the motor continuum; presentation of motor objects. All the faculties of the older psychologists are resolvable into differences in the object attended to, the subject has "the one power of variously distributing that attention upon which the effective intensity of a presentation in part depends" (p. 57). "We do not attribute such diversities among objects to subjective activity. . . . All objects—no matter what—must be 'there' for, or be given to, the subject; they cannot be 'posited' by it—in other words, they must be 'presented'" (p. 66).

Presentation is here treated as if it were the relation of object to subject when the object is cognized by the subject, *i.e.*, as if it were a cognitive relation. It needs but a simple, though fundamental, change in Dr. Ward's analysis to make it forthwith an ideal basis for realism. Treat the analysis, not as an analysis of concrete individual experience, but as a formula for the relation of mind to reality, and the implied independence of the presented object of the subject will lead directly to realism. Then psychology must be written in terms of feeling and conation, having the outlines which Professor Alexander has sketched for us, while a psychology of presentations becomes a contradiction in terms.

The point to notice here, however, is that Dr. Ward's presentation relation seems then to be identical with what Dr. Moore terms acquaintance, and seems to justify the doctrine that there is "knowledge by acquaintance." Now this treatment of presentation as a cognitive relation seems to me to be in direct conflict with Dr. Ward's main teaching on the psychology of cognition. By so treating it he sets the stage of mental life for cognition; feeling is made consequential on cognition, and conation dependent on feeling. "On the side of the subject, this presentational relation implies what, for want of a better word, may be called attention. . . . Attention so used, will cover part of what is meant by consciousness—so much of it, that is, as answers to being mentally active, active enough at least to '*receive impressions*'" (p. 49). Any activity other than receptivity will be dependent, in the first place, on such receptivity; non-voluntary attention (by which Dr. Ward means attention which excludes interest) is thus more fundamental than interest (p. 262, note 2). I say this treatment is in conflict with Dr. Ward's main teaching on cognition, because, when he comes to take up the psychology of cognition in detail, it is evident that the mere fact of presentation does not constitute cognition.

To be known the presented x must be differentiated from the presentation continuum. "Of the very beginning of this continuum we can say nothing. . . . The view here taken is that at its first appearance in psychical life a new sensation or so-called elementary presentation is really a partial modification of some pre-existing and persisting presentational whole, which thereby becomes more complex than it was before" (pp. 76–79). For the development of the presentation continuum it is essential that the continuum as differentiated should persist and that later modifications should restrict and modify earlier. This teaching in itself might be sufficient to show that, for Dr. Ward, at any rate, there never can be an acquaintance with a bare "this," but that the "this" in

respect of its "whatness" stands out from the background of experience—a background be it noted which is absent in the theory of knowledge by acquaintance.

When Dr. Ward traces out how this differentiation which is essential for cognition comes about, we recognise the advance he makes on his predecessors. Feeling and conation come to the front. Conation is more prominent in *Psychological Principles* than in the article in the ninth edition of the *Encyclopædia*; but in the article also its rôle was clear. It is the principle of "subjective selection" which explains the diversity in the actions which follow the same presentation. "The twilight that sends the hens to roost sets the fox to prowl" (p. 50). It is to their dependence on feeling that movements owe their most distinctive character—the possession of psychical antecedents. "The feeling again is what it is because the subject has already a determinate nature" (p. 54). But the principle of subjective selection explains not only the diversity in action, but the consequent differentiation in the presentation continuum. "The uninteresting is not known but ignored" (p. 21). "All . . . syntheses or integrations depend primarily on what we have called 'movements of attention,' which movements in turn depend very largely upon the pleasure and pain that presentations occasion" (p. 140).

We are told that attention which is non-voluntary, and so far passive, is objectively *diverted*. (The italics are mine.) We learn that non-voluntary movements of attention have little to do with psychical life. "The mere surprise or 'shock' that non-voluntarily determines a momentary notice, unless accompanied or immediately followed by either pain or pleasure, leads to nothing. . . . So the objective differentiation proceeds on subjectively determined lines. This is for psychology the first and fundamental fact: to lose sight of it is to miss the essential meaning of experience" (p. 415).

Now the subject of such experience cannot be represented as a passive recipient of the "given." He is a "seeker" who

finds what his nature makes him seek, who discovers his presentation continuum just as truly as, according to Dr. Ward, he builds his memory continuum. So far as there is failure in the answer supplied in a practical situation there may be said to be error in sense perception. At the perceptual level of development "truths work." "We catch many Tartars, and so learn wariness in a rough school" (p. 187).

With his view of the fundamental duality of experience it is possible for Dr. Ward to hold both that presentations are "given," are "there for" the subject, and that they are selected by the subject. "We do not take—at least do not take up—what is uninteresting, nor do we find unless we seek, nor seek unless we desire. The cognitive aspect of experience in a word, is far more one of experiment, as its very etymology suggests, than one of mere disinterested observation" (*Naturalism and Agnosticism*, vol. ii, p. 133).

But it is difficult to understand how Dr. Ward can maintain that, "not intellect but will, not cognition but conation, not sensitivity but activity, is a clue to the true understanding of the character and development of experience" (*Psychological Principles*, p. 20); how he can define psychology as 'the science of individual experience—understanding by experience, not merely, not primarily, cognition but also, and above all, conative activity or behaviour," and yet at the same time treat the fundamental relation of subject and object in experience as a cognitive relation, and furthermore retain a scheme of analysis whereby conation is made dependent on cognition. If presentation is to be the name for the relation of subject and object which is the condition of experience, then it can neither be a relation of cognition nor of feeling nor of conation, but that which renders each of these possible.*

* The difficulties which arise from the dependence of conation on cognition and feeling come, I think, into special prominence in Dr. Ward's treatment of the character of feeling as determined by the effective or ineffective exercise of attention, and again in his treat-

It is surely their predominant interest in the theory of knowledge which makes writers interpret the relation of subject to object as a relation of knower to object known. I suggest that this is why Dr. Moore passes from the fact of acquaintance to "knowledge by acquaintance," as if the one were tantamount to the other. Now if what Dr. Moore means by acquaintance were really the same relation as that which Dr. Ward terms presentation, I should not dispute the fact of acquaintance, however much I might deprecate the name given to the fact. I should, however, still dispute that the relation in question was a cognitive relation, and maintain that so to conceive it was to invalidate the meaning of experience and to invent a form of cognition that implied mental atrophy.

But in spite of any similarity in description I do not think that Dr. Moore does mean by acquaintance the relation which Dr. Ward calls presentation. The relation of subject and object which Dr. Moore seems to have in view is not that which is expressive of the duality of experience, but that which is expressive of the duality between mental life on the one hand and the so-called "real" world on the other. This difference in fundamental analysis lies at the root of the difference in answer given to the question, "Is there knowledge by acquaintance?" The very fact denoted by acquaintance is in dispute.

I am very glad to have the support of Professor Hicks in the denial of "knowledge by acquaintance" and in the counter-assertion of knowledge as essentially "knowledge about." I agree with all that he has said as to the part played by discrimination and comparison in cognition. But I find myself unable to reconcile the denial and counter-

ment of instinct and of value. There is no clear indication that cognition stands for a specific constituent of experience. The fact that it is attention consequent on feeling does not differentiate it as a pulse in experience from the attention which is said to determine feeling.

assertion with the acceptation of a relation between the subject and an "object," when by object he means what Mr. Russell means. He describes it as something which stands over against the subject and exists independently of the cognizing subject. In a preceding passage, Professor Hicks describes it as "that which in cognition stands over against the subject, and which there is no ground for assuming to be dependent either for its being or for its nature upon the circumstance of its being cognized." I do not think the two descriptions have the same significance, and I take it that the latter expresses Professor Hicks's meaning more accurately. I gather that the relation is the relation referred to as subsisting between "the mind and what, rightly or wrongly, is described as something other than the mind." How Professor Hicks can assert that all cognition involves differentiation, and yet agree that an object in Mr. Russell's sense is presented to the subject, I do not understand. He claims that there is a direct relation between the subject and what he terms "its awareness of an object," that this awareness is a product which only comes into being through the concrete situation of a mental act being directed on the "real" object. The product is not itself the object; it is appearance as contrasted with "reality." Professor Hicks uses this analysis to explain error in sense perception. Inasmuch as the product of the act directed on the "real" object may fail to correspond to the fulness of reality, there is room for error. The product "awareness of x " is regarded as private to the percipient, and is coloured by the individuality of the percipient.

Now it seems to me that by his account of the discriminative activity of attention in cognition, Professor Hicks has invalidated any possible theory of a cognitive relation between the subject and this "real" object which is said to be presented to the subject. His article on attention in the *British Journal of Psychology* is a valuable contribution to psychology, and what is there shown to be discriminated by attention, is not any

"real" object in Mr. Russell's sense of the term, but the "content of the act of apprehending." "A content possessing a higher degree than others of painful or pleasurable feeling-tone would become naturally differentiated from the rest" (vol. vi, pt. 1, p. 14). In reply to an argument that we cannot be pleased or displeased with what is not in consciousness, he says: "The argument misses the whole point of the consideration, which of course is that a content may be in consciousness before it is attended too, and unless that is admitted, it is difficult to see how any psychological explanation of the circumstances we are concerned with is possible at all" (p. 15).*

Now how can attention be said to be directed on the object in Mr. Russell's sense of the term object, when what is differentiated is not this object at all, but the content in consciousness, the content of the act, or as Professor Hicks also styles it, the private sensible appearance? The "real" object seems to me to be left in the air, and the fact of presentation, the relation between the subject and an object in Mr. Russell's sense, to be no fact at all. The connexion in contemporary philosophy between realism and the doctrine of "knowledge by acquaintance" is no accidental one.

In what Professor Hicks has described as the product of the act of knowing directed by the subject on the object, he has, it seems to me, included the whole of experience, so far as experience is cognitive. "Awareness of x " is made to appear as a component revealed by analysis of cognition, but it is in truth the very cognition that is being analysed. It is a moment of experience implying both the subject and the object of Dr. Ward's presentational relation. It implies the discriminating and the discriminated. As Professor Hicks himself

* I should like to point out the close connexion between the present contention that all cognition involves differentiation and the question raised in a previous symposium, "Can there be anything obscure or implicit in a mental state?"—*Proceedings of the Aristotelian Society*, 1912-13.

says: "We distinguish the content from the act of apprehending, but what in our mature experience gives stability and definiteness to the content as thus distinguished is the presence of a number of thoughts or concepts which connect the content in question with the objective order of real fact. So too we distinguish the act of apprehending from the content apprehended, and what gives stability and definiteness to the distinction is a number of thoughts or concepts which connect the act of apprehending with the train of experiences constituting what we call the self" (p. 10). The subject which he has depicted on the one side of this "awareness of x " and the "real" object which he has depicted on the other, are the shadows cast by the thoughts and concepts he refers to. They are idols of the cave.

While Mr. Russell may be said to have eliminated the subject and object of cognitive experience by substituting for them the subject and object of epistemology, Professor Hicks may be said to have duplicated the subject and object of cognitive experience by adding the subject and object of epistemology.

IV. *By* C. D. BROAD.

THE proposed subject of our Symposium contains a "fallacy of many questions," and our first business must be to disentangle them. Unless there be acquaintance there can hardly be knowledge by acquaintance. But there might be acquaintance and no knowledge by acquaintance; and again, even if both exist, acquaintance might not be itself knowledge. Lastly, even if both exist and both be knowledge, it would not follow that the knowledge which *is* acquaintance is the same as knowledge *by* acquaintance. There is Dickens and there are books by Dickens; but Dickens himself is not a book, and, if he were, he is certainly not a book by Dickens. Thus there arise the following questions:—(A) Is there such a thing as acquaintance? (B) If so, is acquaintance itself knowledge? (C) What is knowledge *by* acquaintance, and does it exist? This question clearly splits into two:—(1) If acquaintance be not knowledge is there a kind of knowledge specially related to it (and, if so, how?), such that it may be called knowledge *by* acquaintance? And (2) If acquaintance be knowledge is it the same as knowledge by acquaintance, or is the latter another kind of knowledge related in some peculiar way to the knowledge which *is* acquaintance? Our answer to (B) will dispense us from troubling about one of the two questions under (C).

(A.)

Is there Acquaintance? To answer this question we must either give a definition or a description of acquaintance, or we must try to point out unambiguous examples of this state of mind. I shall begin by clearing the ground of some things which, I think, neither are nor are implied by acquaintance:—

(i) I certainly do not mean by it "the sort of relation which a subject has to its awareness of an object." Professor

Dawes Hicks seems to think that many people have meant by it this relation, and that they have confused this with "the sort of relation which a subject may have to an object." I very much doubt whether anyone has been in the deplorably confused state which this mistake would involve. Such a person would have to identify the two statements "I am acquainted with x " and " x is a state of my mind."

Now of course I do not wish to deny that I *may* be acquainted with my states of mind, *e.g.*, through introspection. But, if so, I am acquainted with them because and in so far as I introspect, not because they are my states. Again, many people hold that sensation is, or involves, acquaintance with sense-data. And some people, *e.g.*, Professor Stout, seem to hold that sense-data are states of mind of the nature of feelings. If both these opinions were true I should be acquainted with what is in fact a state of my mind whenever I had a sensation. But this would not be *because* the sense-datum is a state of my mind, but because it is the object of a sensation. Moreover, everyone who talks of acquaintance regards it as a *cognitive* state; whilst the relation between me and my states of mind is perfectly neutral as between cognition, conation, and feeling.

(ii) Mr. Russell has described acquaintance as "a direct cognitive relation" between a mind and an object. The question as to whether and in what sense it is cognitive belongs to a later section; but it will be in place here to point out some of the ambiguities of *direct* and to explain in what sense I do not hold that acquaintance need be direct. The contrast between direct and indirect may refer either (*a*) to the nature of a relation or (*b*) to distinctions between various kinds of judgment. The latter senses do not concern us at present, since they refer to *knowledge* by acquaintance primarily, and only to acquaintance itself if this prove to be knowledge.

A relation may be said to be direct if the proposition xRy

be such that there is no entity z such that xRy can be analysed with xSz and zTy , where S and T are other relations. Directness in this sense is no part of what is meant by acquaintance, as I understand it. Suppose, *e.g.*, that the statement: I am acquainted with x should prove to be analysable into the propositions: This awareness has x for its object and This awareness is one of my states of mind. Then the relation between me and x would not be direct in the present sense, but this would not prevent it being acquaintance.

There is one other sense of directness which concerns us at present. Propositions are said to be *about* their terms, and when I believe them I believe something about the terms. When my mind has this relation to a term it is said that, so far, it is not *directly* related to the term in question. In this sense directness means absence of aboutness. I am inclined to think that acquaintance is direct in this sense. This does not of course imply directness in the first sense. It does imply that acquaintance is not knowledge, if all knowledge be *about*; but it does not imply, even on this hypothesis, that there is no acquaintance or that there is no knowledge *by* acquaintance.

(iii) I shall now try to offer examples of what I mean by acquaintance. I feel no doubt of its reality; but there are two difficulties in giving satisfactory examples. The first is that when I am acquainted with anything I generally stand in other cognitive relations to it as well. *E.g.*, if I suddenly open my eyes, or suddenly see a landscape illuminated on a perfectly dark night by a flash of lightning, or suddenly in the quietness of the night hear a clap of thunder, my cognitive relation to these sights and sounds seems to me to be primarily one of almost pure acquaintance. But I almost at once begin to note distinctions in the total field and to pass judgments about physical objects, such as: This is a tree, That is a horse, etc. I take these sudden and yet vivid experiences as examples (a) because the experience is too short for many acts of

judgment and discrimination to take place, and (b) because it is not vague or scarcely distinguishable into act and object like drowsy states and bodily feelings.

The second difficulty is the following. When I am asked by someone to give him an example of acquaintance I naturally give him some particular act of mine. Now he can only know this act of mine (as all my other acts) by description. And part of my description to him of the act will be a description of its object. *E.g.*, I say: When I look at a cup from the side I am acquainted with an elliptically-shaped object. He at once answers: To separate this out of your total field of view involves an act of discrimination, and to know that it is elliptical involves acts of judgment and comparison. Hence, what you have offered as a typical act of acquaintance is really an example of acts of discrimination, comparison, and judgment. This objection contains two fallacies: (a) I may be acquainted, among other objects, with what is in fact an object of elliptical shape and in fact differs from other objects in my total field of view; and yet I may never have performed an act of discrimination or passed the judgment: this is elliptical. But when I want to make other people understand what it is that I was acquainted with I have to describe it in general terms; and, in order to do this, I do have to discriminate, analyse, and pass judgments about, the objects of my acquaintance. Thus, certain processes which *are* necessary in order that I may describe what I was acquainted with to other people are *thought to be* necessary in order that I may be acquainted with anything myself. (b) Of course the other fallacy is the failure to recognise that, even if my acquaintance with *x* has been preceded by acts of discrimination, etc., this has no tendency to prove that I do not in the end become acquainted with *x*. You might as well argue that there are no such beings as men because no man could exist unless some woman existed to be his mother.

(iv) Possibly it might be said: Perhaps acquaintance does

exist at the very beginning of such experiences as you have quoted; but the moment discrimination and judgment begin (and you admit that they begin almost at once) acquaintance ceases. Now, if this simply means that *mere* acquaintance ceases, it is a dull analytic proposition. If it means that, as I pick out and recognise details in a total field of view, a relation (viz., acquaintance), which was present before I began to discriminate ceases to be present in any form, it is synthetic but highly doubtful. Suppose we shift our attention about our field of view and distinguish one part from another, and the parts from the whole. There are three points to notice: (*a*) a change takes place in our experience, (*b*) we regard ourselves as discovering and not creating distinctions, and (*c*) we regard these distinctions as being present in that of which we were already aware. If we turn our head and thus alter our total field of view, the first two conditions are fulfilled and the third is not. There are various, more or less plausible interpretations which we may put on these admitted changes; but none of them, I think, implies that acts of acquaintance cease to be a part at least of our total state of mind. We may, *e.g.*, hold that we continue to be acquainted with precisely the same total sense-datum, but that we *also* become acquainted with various parts of it. Or we may hold that the sense-datum really changes, and that, after discrimination we are acquainted with a somewhat different object from that with which we were acquainted before we began to discriminate. We can then explain in various ways our belief that we discover and do not create the distinctions. *E.g.*, to say that the distinctions were all along contained in the original sense-datum may be a loose way of saying that the old and the new sense-datum are both appearances of the same physical object, and that the new sense-datum gives us fuller and clearer information about those features in the physical object concerning which the old sense-datum gave scantier and vague information. Or again, we might drop all reference to a supposed physical object, and

say that our meaning simply is that, on comparing the present sense-datum with the past one as we remember it, we find certain specific kinds of resemblance and difference between the two.

There is no need to enter in detail into these alternatives. The two points to notice are: (a) that they all give a perfectly clear meaning to the statement that we become aware of distinctions that were present all along in the original object of our awareness, whilst it is not at all clear what meaning a theory which tries to work with *nothing but* discrimination will give to the latter part of this statement. And (b) that on all of these we are all along acquainted with *some* sense-datum, though not necessarily with the same sense-datum all through the process. Indeed, the following seem to me to be plain facts: (a) That when I suddenly look at a landscape or hear a gun fired I enter into a special kind of relation with a visual field or a noise; that this relation probably begins to subsist before I begin to judge or discriminate; and that, at any rate, it is present in full force at a time when my acts of discrimination and judgment have hardly begun to enter the field. (b) That when I have discriminated and recognised various parts of the whole landscape, *one* at least of the relations which I have to these parts is of precisely the same kind as that which I originally had to the whole. And this relation is what I understand by acquaintance with sense-data. That other relations have been included under the name of acquaintance I do not doubt, *e.g.*, so-called acquaintance with universals. I think this is almost certainly a different relation, and that it gets the same name because of the common characteristic of not being about its object.

(v) To my statement, that by acquaintance I mean the sort of relation that I have to sense-data, Professor Dawes Hicks would reply that I cannot have such a relation because there are no sense-data for me to be related to. One reason which he gives appears to be that he takes it to be part of the *meaning*

of a sense-datum to be private and mind-dependent. Now this is certainly no part of what I mean by the word, and it is obviously no part of what Mr. Russell means by it. If it is believed, it is believed as a synthetic proposition and must be supported by arguments. Hence any objections to sense-data on the ground that they are *necessarily* private and mind-dependent are simply irrelevant. But this is not the whole of Professor Dawes Hicks's contention.

I say that I am aware of an elliptical shape when I look sideways at a round tea-cup, and that this is an instance of acquaintance. He answers that it is not an instance of anything, because there *is* no elliptical shape for me to be aware of. Now, however good Professor Dawes Hicks's arguments might be, I am afraid I should continue to prefer the evidence of my own sight. But they do not even raise a difficulty in my mind. One argument is that "there is not . . . a 'thing' called 'a shape'; the 'thing' is the cup." Now, in the first place, I never supposed I was aware of an ellipse *et præterea nihil*. Substitute "elliptical coloured patch" and the first objection vanishes. Secondly, I agree that it is usual to confine the name "thing" to physical objects. As I do not wish to assert (or deny) that the elliptical coloured patches are (or are parts of) physical objects, I agree not to call them "things"; in fact, that is why I call them "sense-data." That they exist and that they are elliptical will certainly not be disproved by showing that they are not *mere* ellipses (which I never dreamt), and are not things (which I never called them).

Of course, Professor Dawes Hicks's positive contention is that a meaning can be attached to the statement: This cup looks elliptical though it is circular, although there is nothing before my mind which is in fact elliptical. Now a perfectly clear meaning and motive can be assigned to such judgments if I am in fact aware of an elliptical object when I look at a cup from the side. I cannot see that Professor Dawes Hicks's theory has yet assigned either. I suppose he must take the

predicate "looking elliptical" as ultimate and unanalysable. And of course I quite agree that the two *judgments*: This *looks* elliptical, and This *is* circular, are perfectly compatible. What I do not see is what he supposes the second judgment to mean, and why—if there be no elliptical object before the mind when I judge—I say that the cup looks *elliptical* rather than square or of any other shape.

The only positive attempt that I find to answer these questions adds to my perplexity. We are told that "the sense-datum . . . is essentially a product . . . of a mental act . . . being directed on a physical object." But if there are no sense-data I do not understand how they can be products of anything. Yet Professor Dawes Hicks adds that such products must inevitably arise if cognition be an act of discriminating, comparing, etc. I take his meaning to be either that the *judgment*: This looks elliptical, or the (in his view, false) *belief* that I am acquainted with an elliptical object, arises in this way. But I simply cannot understand how the difference between looking elliptical and being round can consist in the contrast between a discriminated part (which by hypothesis is not elliptical) and a more detailed but as yet undiscriminated whole. Such a view seems to me to be for two reasons almost exactly opposite to the facts. (a) An elliptical appearance is *more* and not *less* differentiated than a circular shape, because the latter is perfectly uniform, while the former has a variable radius of curvature. (b) It might be plausible to hold that we reach our belief that the physical object is round by comparing and contrasting the shapes of its appearances from various positions; but the view that we reach our belief that it looks elliptical by discriminating within an object which is in fact round I do not understand at all.

(B.)

Is Acquaintance Knowledge?—This seems to me mainly a verbal question. Acquaintance, so far as I can see, differs from judgment. And the most usual and important meaning of

knowledge is true judgment. If I am right, acquaintance is not knowledge in this sense. It may be called knowledge in so far as it immediately gives rise to the grounds for judgments which do constitute knowledge. But here we are speaking figuratively; this only makes acquaintance knowledge in the sense in which we can say that "the blood is the life."

Here we might leave the matter but for the very ingenious theory suggested, but not asserted, by Dr. Moore in his paper. This theory I understand to be that particular bits of knowledge by acquaintance about x are logically prior to acquaintance with x . I am acquainted with x means There is some property ϕ such that I know the proposition ϕx by acquaintance. The experience of "knowing ϕx by acquaintance" is not further analysable; it does not involve any cognitive relation with x that is not *logically* implied by the proposition: I know ϕx by acquaintance. This does, of course, *logically* imply that I know *something* about x by acquaintance; and this is *defined* by Dr. Moore for the present theory as the *meaning* of the proposition: I am acquainted with x . This theory, if true, would give a perfectly clear answer to our questions (B) and (C, 2). For it tells us that acquaintance is knowledge, that it differs from knowledge by acquaintance, and what is the precise relation between the two kinds of knowledge.

I am not in a position to refute the theory, but I am not inclined to accept it for the following reasons: (*a*) It does not seem to me on careful inspection that the relation which I have to a flash of lightning when I first see it is simply that I know certain propositions about it in a peculiar and not further analysable way. (*b*) On this theory there is a certain class of judgments marked out from all others by an ultimate peculiarity which constitutes them bits of knowledge by acquaintance. They do not involve any further cognitive relation to their terms on the part of the judging mind. Now we actually divide this group without any difficulty into sub-groups according to the subjects of the judgments: viz., bits of know-

ledge by acquaintance about A, bits of knowledge by acquaintance about B, . . . and so on. I do not see how we do this unless we have some special cognitive relation to A, B, . . . etc., as well as to propositions as wholes which are in fact about these subjects. I do not say that this difficulty is insuperable, but I think it is a difficulty. (c) It is commonly taken as an axiom that "we must know what we are talking about." If this be interpreted to mean "we must be acquainted with what we are judging about," it seems to me highly plausible. And it seems to me to be a synthetic proposition. On Dr. Moore's theory it would be true, but would reduce to the tame analytic assertion: If I judge anything definite about x , I must judge something or other about x . The axiom appears to assert more than this, and therefore to demand acquaintance in a sense other than that allowed by Dr. Moore's suggested theory.

I am therefore inclined to hold (a) that acquaintance is at any rate not the same as knowledge by acquaintance. This is true even on Dr. Moore's suggested theory. And (b) that acquaintance itself is probably not knowledge at all, if by knowledge you mean true judgment. It can be called cognitive because of its very intimate connexion with knowledge by acquaintance; but if you call it knowledge, you are speaking in metaphors or using knowledge in an unusual sense.

(C.)

Knowledge by Acquaintance.—For those who accept Dr. Moore's suggested theory the inquiry is now finished. For us it remains to attack the question (C 1): What is Knowledge by Acquaintance, and how is it related to acquaintance?

When Mr. Russell told us that acquaintance was "a direct cognitive relation," he did not recognise the extreme ambiguity of directness, and I am inclined to think that he did not very clearly envisage the possibility of acquaintance being different from knowledge by acquaintance, and not being itself knowledge at all. The result is that some of his statements about

acquaintance apply to acquaintance itself, and some to knowledge by acquaintance. We have already discussed the sense in which acquaintance itself is and those in which it is not direct. We shall now find it profitable to pursue the ambiguities of directness within the region of judgment.

(i) On the face of it some knowledge about some objects is reached by inference and some is not. The former may be called indirect and the latter direct knowledge. Now, if there be knowledge by acquaintance it is non-inferential, and therefore direct in the present sense. This, of course, does not imply that it is direct in any sense that we have already met. Knowledge which is direct, in the sense of being non-inferential, is not direct, in the sense of not being about its objects, nor in the sense of being an unanalysable relation between a mind and an object. Some philosophers apparently hold that *all* knowledge is inferential; at any rate, some idealists who write about logic have expressed that opinion. If they be right, there will be no knowledge by acquaintance; but it will not follow that there is no acquaintance, nor that acquaintance is not direct in the sense in which we have allowed it to be so.

(ii) There is, I am afraid, a tendency to confuse knowledge about with knowledge by description. The latter is then opposed to knowledge by acquaintance. Hence, it is thought that knowledge by acquaintance is not knowledge about, and therefore not knowledge at all. This is a sheer confusion. All judgments whatever are about their terms in the sense of about which has at present been used. The peculiarity of descriptive judgments is that they are (*a*) about their own terms in the ordinary sense, and also (*b*) about a term which is not one of their own, at least if they are true. The two senses of about are not the same.

If Mr. Russell's theory of description be true, the judgment Scott is the author of *Waverley* is about the man Scott only in this derivative and Pickwickian sense, whilst it is about the word *Scott* in the ordinary sense in which all judgments what-

ever are about their terms. Let us say that it is *anent* the man Scott and *about* the word *Scott*. Then the truth is that knowledge by acquaintance is only about terms and not anent them, whilst knowledge by description is about some terms and anent others. One meaning of directness is aboutness in contrast to anentness; and, in this sense, knowledge by acquaintance is direct as contrasted with knowledge by description. This sense of directness obviously does not imply directness in any other sense which we have yet met.

(iii) Professor Dawes Hicks in parts of his paper seems to take directness in yet another sense. He takes it to mean that knowledge by acquaintance is infallible. This is a fifth meaning of directness which, so far as I can see, neither implies nor is implied by any of the other four. I think that by discussing the subject under this heading we shall get an insight into what is meant by knowledge by acquaintance. In the first place it is not made clear whether the supposed infallibility is meant to refer to acquaintance or to knowledge by acquaintance. We can now answer this question. Acquaintance itself is not judgment, and only judgments can be true or false. Infallible means necessarily true. It is therefore absurd to call acquaintance itself infallible; it cannot be false, but it equally cannot be true: it simply falls outside the region of this disjunction. What must be meant then is that judgments founded on acquaintance are necessarily true.

Now, I take it to be quite clear that judgments may be "founded on" acquaintance in various ways, and that some of such judgments are clearly fallible. The question: In what way must a judgment be founded on acquaintance to count as knowledge by acquaintance, and are such judgments infallible? remains for discussion. Let us take Professor Dawes Hicks's example as a beginning. He holds that the man who believes in knowledge by acquaintance must assert: "I cannot possibly see a thing to be a sheep unless it is a sheep." If this were so there would be nothing left to be said for knowledge by

acquaintance. But let us see what such a judgment really amounts to. You cannot strictly "*see* a thing to be a sheep" or to be anything else. The man in question has been acquainted by sight with a visual sense-datum of a certain shape and colour. On the basis of this he has judged that there is a physical object before him, and has classified this physical object as a sheep. Obviously there are plenty of opportunities of going wrong in this complicated process; but I cannot think that anyone would regard the final judgment as knowledge by acquaintance. Of course, such judgments are constantly made and are founded upon our acquaintance with sense-data; but I should not count any judgment which asserted the existence of a physical object and ascribed qualities to it as knowledge by acquaintance.

In judgment by acquaintance it seems to me that we assert that a sense-datum with which we are acquainted either (*a*) has such and such qualities as a whole, or (*b*) has such and such parts with which we are acquainted, or (*c*) that such and such parts of it with which we are acquainted stand in such and such relation to each other. An example of the first is when I judge that a visual sense-datum of which I am aware when I look at a cup from the side is elliptical. An example of the second is when in a total field of view I distinguish a red patch and a green patch. An example of the third is when I judge that this red patch is wholly surrounded by a green border.

The first point to notice is that a sense-datum with which I am acquainted may perfectly well have parts with which I am not acquainted. If therefore I say that a given sense-datum has no parts except those which I have noticed and mentioned I may quite well be wrong. Similarly there may well be differences of quality which I cannot detect. If I say: This sense-datum with which I am acquainted is coloured all over with an uniform shade of red, this statement may be false. To put it generally a sense-datum may be more differentiated than I observe it to be, and therefore whenever I say, on the basis of

my observation, that it has *only* such and such a degree of differentiation I run a risk of error. But no judgment of this kind is, I think, to be counted as a judgment of *pure* acquaintance, for the following reason. All such judgments contain an element of negation, based on observation. But *no* negative judgment can be based on observation in precisely the same sense as that in which *some* affirmative judgments are based upon observation. Compare, *e.g.*, the two judgments: (*a*) This patch which I see is red, and (*b*) This patch which I see is not green. Both are based on my observation of the patch. But they cannot be based on it in the same way, for it seems pretty certain that I cannot observe non-greenness in the same sense in which I can observe redness. I suspect that judgments of the second kind are founded indirectly on acquaintance by means of judgments of the first kind which are founded directly on it. Thus I judge that this patch is not green because (*a*) I observe that it is red, and (*b*) I know that redness and greenness are spatiotemporally incompatible. A genuinely negative element may be concealed under an affirmative form of words. Thus: This is uniformly red really means: There are no differences of shade in different parts of this. I think it is of the essence of judgments of pure acquaintance not to contain such negative elements, and the fact that such elements are often concealed by language causes some judgments to appear to be judgments of pure acquaintance when they are really not so.

I do not, however, see any reason to suppose that even judgments of pure acquaintance are theoretically infallible. We must distinguish two notions which are often confused:—infallibility and incorrigibility. Judgments of pure acquaintance are perhaps incorrigible; but this does not prove that they are infallible. All judgments involve universals among their terms, whether they be about sense-data with which we are acquainted or about anything else. And it seems always possible to be mistaken in thinking that such and such a term

is an instance of such and such a quality or that such and such a complex is characterised by such and such a relation. Moreover, when we communicate our judgments to others, there is always the practical possibility of error through others not thinking of the universals of which we want them to think when we use a certain verb or adjective. We can only say that in certain judgments of pure acquaintance the risk of error seems to be at its lowest.

My judgments of pure acquaintance are almost certainly incorrigible by other people, because it is extremely doubtful whether others can be acquainted with the same sense-data as I. Even if it were true that they can, and I do not see how it could be known to be true in any particular instance. And it is doubtful whether such judgments are strictly corrigible even by myself. For I could only correct one such judgment by more careful subsequent observation and reflexion, and, as we have seen, it is doubtful whether I am, strictly speaking, acquainted with the same sense-datum or even with a precisely similar one on the second occasion. Thus it is doubtful whether (if our judgments be about sense-data with which I am acquainted) they refer to the same subject, and therefore doubtful if the second can strictly be a correction of the first.



